EXPONENTS

A POSITIVE EXPONENTS

A.1 WRITING REPEATED MULTIPLICATION IN EXPONENT FORM

Ex 1: Write in exponent form:
$$2 \times 2 \times 2 = \boxed{}$$

Ex 2: Write in exponent form:
$$3 \times 3 \times 3 \times 3 = \boxed{}$$

Ex 3: Write in exponent form:
$$5 \times 5 = \boxed{}$$

Ex 4: Write in exponent form:
$$7 \times 7 \times 7 = \boxed{}$$

Ex 5: Write in exponent form:
$$10 \times 10 \times 10 \times 10 \times 10 = \boxed{}$$

A.2 WRITING IN EXPONENT FORM FROM VERBAL EXPRESSIONS

Ex 6: Write in exponent form:
$$2 \text{ raised to the power of } 3 = \boxed{}$$

Ex 7: Write in exponent form:
$$5 \text{ raised to the power of } 2 = \boxed{}$$

Ex 8: Write in exponent form:
$$7 \text{ raised to the power of } 4 = \boxed{}$$

Ex 9: Write in exponent form:
$$10 \text{ raised to the power of } 5 = \boxed{}$$

A.3 CALCULATING POWERS

Ex 10: Evaluate the power:
$$2^3 = \boxed{}$$

Ex 11: Evaluate the power:
$$5^2 = \boxed{}$$

Ex 12: Evaluate the power:
$$3^4 = \boxed{}$$

Ex 13: Evaluate the power:
$$10^3 = \boxed{}$$

A.4 EXPRESSING NUMBERS IN EXPONENT FORM

Ex 14: Write in exponent form:
$$8 = \boxed{}$$

Ex 15: Write in exponent form:
$$27 = \boxed{}$$

Ex 16: Write in exponent form:
$$16 = \boxed{}$$

Ex 17: Write in exponent form:
$$100 = \boxed{}$$

A.5 INTERPRETING POWERS

MCQ 18: Determine if the following statement is True or False:
$$2^3 = 2 + 2 + 2$$

☐ True
☐ False

MCQ 19: Determine if the following statement is True or False:
$$3^2 = 2 \times 2 \times 2$$

☐ True
☐ False

MCQ 20: Determine if the following statement is True or False:
$$4^3 = 4 \times 4 \times 4$$

☐ True
☐ False

MCQ 21: Determine if the following statement is True or False:
$$3 \times 4 = 4 + 4 + 4$$

☐ True
☐ False

A.6 EVALUATING EXPRESSIONS WITH POWERS

Ex 22: Evaluate the expression:
$$2^3 \times 3^2 = \boxed{}$$

Ex 23: Evaluate the expression:
$$3^2 \times 10^2 = \boxed{}$$

Ex 24: Evaluate the expression:
$$6 \times 10^3 = \boxed{}$$

Ex 25: Evaluate the expression:
$$2.5 \times 10^2 = \boxed{}$$

A.7 CHECKING EQUALITY BETWEEN PRODUCTS AND POWERS

MCQ 26: Determine if the following statement is True or False:

$$2 \times 2 \times 3 \times 3 = 2^4$$

☐ True

☐ False

MCQ 27: Determine if the following statement is True or False:

$$2 \times 2 \times 2 = 3^2$$

☐ True

☐ False

MCQ 28: Determine if the following statement is True or False:

$$2 \times 3 \times 2 \times 3 = 2^2 \times 3^2$$

☐ True

☐ False

MCQ 29: Determine if the following statement is True or False:

$$5 \times 5 \times 5 \times 4 = 5^3 \times 2^2$$

☐ True

☐ False

A.8 WRITING REPEATED MULTIPLICATION OF AN ALGEBRAIC EXPRESSION IN EXPONENT FORM

Ex 30: Write in exponent form:

$$x \times x \times x = \boxed{}$$

Ex 31: Write in exponent form:

$$x \times x = \boxed{}$$

MCQ 32: Which expressions are equal to x?
Choose all answers that apply:

☐ x^2

☐ x^1

☐ 1

Ex 33: Write in exponent form:

$$x \times x \times x \times x = \boxed{}$$

A.9 WRITING ALGEBRAIC EXPRESSIONS IN EXPONENT FORM FROM VERBAL DESCRIPTIONS

Ex 34: Write in exponent form:

$$x \text{ squared} = \boxed{}$$

Ex 35: Write in exponent form:

$$x \text{ to the power of } 4 = \boxed{}$$

Ex 36: Write in exponent form:

$$x \text{ cubed} = \boxed{}$$

Ex 37: Write in exponent form:

$$x \text{ to the power of } 5 = \boxed{}$$

B NEGATIVE EXPONENTS

B.1 WRITING NEGATIVE EXPONENTS AS FRACTIONS

Ex 38: Write as a fraction:

$$3^{-2} = \boxed{}$$

Ex 39: Write as a fraction:

$$10^{-3} = \boxed{}$$

Ex 40: Write as a fraction:

$$2^{-1} = \boxed{}$$

Ex 41: Write as a fraction:

$$5^{-2} = \boxed{}$$

B.2 WRITING FRACTIONS AS NEGATIVE EXPONENTS

Ex 42: Write using a negative exponent:

$$\frac{1}{4} = \boxed{}$$

Ex 43: Write using a negative exponent:

$$\frac{1}{27} = \boxed{}$$

Ex 44: Write using a negative exponent:

$$\frac{1}{1000} = \boxed{}$$

Ex 45: Write using a negative exponent:

$$\frac{1}{25} = \boxed{}$$

C RATIONAL EXPONENTS

C.1 EXPRESSING ROOTS USING EXPONENTS

Ex 46: Write in exponent form:

$$\sqrt{3} = \boxed{}$$

Ex 47: Write in exponent form:

$$\frac{1}{\sqrt{7}} = \boxed{}$$

Ex 48: Write in exponent form:

$$\sqrt{7} = \boxed{}$$

Ex 49: Write in exponent form:

$$\frac{1}{\sqrt{3}} = \boxed{}$$

Ex 50: Write in exponent form:

$$\sqrt{x} = \boxed{}$$

C.2 CALCULATING POWERS AND ROUNDING

Ex 51: Calculate:

$3^{\frac{1}{2}} = \boxed{}$ (rounded to 2 decimal places)

Ex 52: Calculate:

$2^{\frac{1}{2}} = \boxed{}$ (rounded to 2 decimal places)

Ex 53: Calculate:

$2^{-\frac{1}{2}} = \boxed{}$ (rounded to 2 decimal places)

Ex 54: Calculate:

$100^{-\frac{1}{2}} = \boxed{}$ (rounded to 2 decimal places)

D EXPONENT LAW 1

D.1 SIMPLIFYING PRODUCTS OF POWERS

Ex 55: Simplify:

$$7^3 \times 7^2 = \boxed{}$$

Ex 56: Simplify:

$$2^4 \times 2^3 = \boxed{}$$

Ex 57: Simplify:

$$3^5 \times 3^2 = \boxed{}$$

Ex 58: Simplify:

$$10^6 \times 10^2 = \boxed{}$$

Ex 59: Simplify:

$$2^3 \times 2 = \boxed{}$$

Ex 60: Simplify:

$$3 \times 3^4 = \boxed{}$$

D.2 SIMPLIFYING PRODUCTS OF ALGEBRAIC POWERS

Ex 61: Simplify:

$$x^2 \times x^3 = \boxed{}$$

Ex 62: Simplify:

$$x \times x^2 = \boxed{}$$

Ex 63: Simplify:

$$x^2 \times x^2 = \boxed{}$$

Ex 64: Simplify:

$$x^3 \times x = \boxed{}$$

D.3 IDENTIFYING CORRECT EXPONENTIAL EXPRESSIONS

MCQ 65: Which expressions are equal to $2^2 + 2^1$?
Choose all answers that apply:

☐ 6

☐ 2^3

☐ 4^3

MCQ 66: Which expressions are equal to $5^2 \times 5^1$?
Choose all answers that apply:

☐ 25

☐ 125

☐ 5^3

MCQ 67: Which expressions are equal to $3^2 + 3^1$?
Choose all answers that apply:

☐ 12

☐ 3^3

☐ 9^3

MCQ 68: Which expressions are equal to $4^3 \times 4^2$?
Choose all answers that apply:

☐ 4^5

☐ 64

☐ 1024

D.4 SIMPLIFYING EXPRESSIONS OF POWERS

Ex 69: Simplify:

$$x^{-2}\, x^3 = \boxed{}$$

Ex 70: Simplify:

$$2^2\, 2^{-3}\, 2^{-3} = \boxed{}$$

Ex 71: Simplify:

$$x\, x^3\, x^{-2} = \boxed{}$$

Ex 72: Simplify:

$$x^3 \times x^{-3} = \boxed{}$$

E EXPONENT LAW 2

E.1 SIMPLIFYING FRACTIONS OF POWERS

Ex 73: Simplify:

$$\frac{7^5}{7^2} = \boxed{}$$

Ex 74: Simplify:

$$\frac{5^6}{5^4} = \boxed{}$$

Ex 75: Simplify:

$$\frac{2^3}{2^5} = \boxed{}$$

Ex 76: Simplify:

$$\frac{3}{3^5} = \boxed{}$$

Ex 77: Simplify:

$$\frac{7^2}{7^6} = \boxed{}$$

E.2 SIMPLIFYING FRACTIONS OF ALGEBRAIC POWERS

Ex 78: Simplify:

$$\frac{x^5}{x^2} = \boxed{}$$

Ex 79: Simplify:

$$\frac{x^6}{x^4} = \boxed{}$$

Ex 80: Simplify:

$$\frac{x^3}{x^5} = \boxed{}$$

Ex 81: Simplify:

$$\frac{x}{x^5} = \boxed{}$$

Ex 82: Simplify:

$$\frac{x^2}{x^6} = \boxed{}$$

F EXPONENT LAW 3

F.1 SIMPLIFYING POWERS OF POWERS

Ex 83: Simplify:

$$\left(5^2\right)^3 = \boxed{}$$

Ex 84: Simplify:

$$\left(7^3\right)^2 = \boxed{}$$

Ex 85: Simplify:

$$\left(3^2\right)^4 = \boxed{}$$

Ex 86: Simplify:

$$\left(2^5\right)^2 = \boxed{}$$

F.2 SIMPLIFYING POWERS OF POWERS

Ex 87: Simplify:

$$\left(x^2\right)^3 = \boxed{}$$

Ex 88: Simplify:

$$\left(x^3\right)^2 = \boxed{}$$

Ex 89: Simplify:

$$\left(x^2\right)^4 = \boxed{}$$

Ex 90: Simplify:

$$\left(x^5\right)^2 = \boxed{}$$

G EXPONENT LAW 4

G.1 SIMPLIFYING POWERS OF PRODUCTS

Ex 91: Simplify:

$$(3 \times 5)^2 = \boxed{}$$

Ex 92: Simplify:

$$(2 \times 3)^4 = \boxed{}$$

Ex 93: Simplify:

$$(3 \times 7)^3 = \boxed{}$$

Ex 94: Simplify:

$$(3 \times 5 \times 7)^2 = \boxed{}$$

G.2 SIMPLIFYING POWERS OF PRODUCTS

Ex 95: Simplify:
$$(2 \times x)^3 = \boxed{}$$

Ex 96: Simplify:
$$(x \times 3)^2 = \boxed{}$$

Ex 97: Simplify:
$$(5 \times x)^4 = \boxed{}$$

Ex 98: Simplify:
$$(x \times 2)^5 = \boxed{}$$

H EXPONENT LAW 5

H.1 SIMPLIFYING POWERS OF FRACTIONS

Ex 99: Simplify:
$$\left(\frac{5}{3}\right)^2 = \boxed{}$$

Ex 100: Simplify:
$$\left(\frac{2}{7}\right)^3 = \boxed{}$$

Ex 101: Simplify:
$$\left(\frac{1}{2}\right)^2 = \boxed{}$$

Ex 102: Simplify:
$$\left(\frac{1}{3}\right)^3 = \boxed{}$$

H.2 SIMPLIFYING POWERS OF ALGEBRAIC FRACTIONS

Ex 103: Simplify:
$$\left(\frac{x}{2}\right)^4 = \boxed{}$$

Ex 104: Simplify:
$$\left(\frac{1}{x}\right)^3 = \boxed{}$$

Ex 105: Simplify:
$$\left(\frac{2}{x}\right)^4 = \boxed{}$$

Ex 106: Simplify:
$$\left(\frac{x}{10}\right)^2 = \boxed{}$$

I EXPONENT LAW 6

I.1 EXPRESSING NEGATIVE EXPONENTS AS FRACTIONS

Ex 107: Write as a fraction:
$$\left(\frac{4}{7}\right)^{-1} = \boxed{}$$

Ex 108: Write as a fraction:
$$\left(\frac{5}{3}\right)^{-2} = \boxed{}$$

Ex 109: Write as a fraction:
$$\left(\frac{1}{2}\right)^{-3} = \boxed{}$$

Ex 110: Write as a fraction:
$$\left(\frac{2}{3}\right)^{-3} = \boxed{}$$

I.2 MULTIPLYING BY THE INVERSE

Ex 111: Simplify:
$$\frac{3}{2} \times \left(\frac{3}{2}\right)^{-1} = \boxed{}$$

Ex 112: Simplify:
$$\frac{x}{2} \times \left(\frac{x}{2}\right)^{-1} = \boxed{}$$

Ex 113: Simplify:
$$\frac{a}{b} \times \left(\frac{a}{b}\right)^{-1} = \boxed{}$$

J ORDER OF OPERATIONS

J.1 EVALUATING EXPRESSIONS WITH EXPONENTS IN 2 STEPS

Ex 114: Evaluate this expression:
$$2 \times 5^2 = \boxed{}$$

Ex 115: Evaluate this expression:
$$2^3 - 1 = \boxed{}$$

Ex 116: Evaluate this expression:
$$(2 + 1)^2 = \boxed{}$$

Ex 117: Evaluate this expression:
$$2^3 \div 4 = \boxed{}$$

Ex 118: Evaluate this expression:
$$(5 - 2)^2 = \boxed{}$$

J.2 EVALUATING EXPRESSIONS WITH EXPONENTS IN 3 STEPS

Ex 119: Evaluate this expression:

$$2^3 \times (8 - 6) = \boxed{}$$

Ex 120: Evaluate this expression:

$$(2 + 1)^2 - 1 = \boxed{}$$

Ex 121: Evaluate this expression:

$$(3^2 - 1) \times 4 = \boxed{}$$

Ex 122: Evaluate this expression:

$$\frac{3^2 - 1}{2} = \boxed{}$$

J.3 FINDING THE OPERATORS

Ex 123:

$$3^3 \begin{array}{l} \square\ + \\ \square\ - \\ \square\ \times \\ \square\ \div \end{array} 2^2 = 23$$

Ex 124:

$$2^4 \begin{array}{l} \square\ + \\ \square\ - \\ \square\ \times \\ \square\ \div \end{array} 3^2 = 144$$

Ex 125:

$$2^3 \begin{array}{l} \square\ + \\ \square\ - \\ \square\ \times \\ \square\ \div \end{array} 4 = 2$$

Ex 126:

$$(2 + 1)^2 \begin{array}{l} \square\ + \\ \square\ - \\ \square\ \times \\ \square\ \div \end{array} 1 = 10$$

J.4 COMBINING NEGATIVE POWERS WITH ARITHMETIC

Ex 127: Write as a fraction:

$$1 + 2^{-1} = \boxed{}$$

Ex 128: Write as a fraction:

$$3^{-1} - 1 = \boxed{}$$

Ex 129: Write as a fraction:

$$5 \times 3^{-2} = \boxed{}$$

Ex 130: Write as a fraction:

$$\frac{4}{5} \times 2^{-2} = \boxed{}$$

J.5 SIMPLIFYING ALGEBRAIC EXPRESSIONS

Ex 131: Simplify the expression:

$$2x^2 + 3x^2 = \boxed{}$$

Ex 132: Simplify the expression:

$$3x^2 - x^2 = \boxed{}$$

Ex 133: Simplify the expression:

$$2x^2 + 3x + x = \boxed{}$$

Ex 134: Simplify the expression:

$$x^2 + 2x + x^2 + 5x + 1 = \boxed{}$$

Ex 135: Simplify the expression:

$$3x^2 + 4 + 2x + x^2 + 6x + 1 = \boxed{}$$

Ex 136: Simplify the expression:

$$(2x - x)^2 = \boxed{}$$

J.6 SIMPLIFYING EXPRESSIONS OF POWERS

Ex 137: Simplify:

$$\frac{2^3}{2} \times 2^3 = \boxed{}$$

Ex 138: Simplify:

$$x^3 \times \frac{x^4}{x^2} = \boxed{}$$

Ex 139: Simplify:

$$\frac{x}{x^2}\, x^{-1} = \boxed{}$$

Ex 140: Simplify:

$$\frac{2^2}{2 \times 2^3} = \boxed{}$$

Ex 141: Simplify:

$$\left(\frac{x}{2}\right)^2 \times 4 = \boxed{}$$

Ex 142: Simplify:

$$\frac{x^3 \times \left(x^2\right)^2}{x^4} = \boxed{}$$

J.7 EVALUATING TO AN INTEGER

Ex 143: Express as an integer:
$$\sqrt{2} \times 2^{\frac{1}{2}} = \boxed{}$$

Ex 144: Express as an integer:
$$\frac{2^{\frac{3}{2}}}{\sqrt{2}} = \boxed{}$$

Ex 145: Express as an integer:
$$\left(\sqrt{2}\right)^4 = \boxed{}$$

Ex 146: Express as an integer:
$$(3\sqrt{2})^2 = \boxed{}$$

K SCIENTIFIC NOTATION

K.1 WRITING NUMBERS AS POWERS OF TEN

Ex 147: Write in exponent form:
$$100 = \boxed{}$$

Ex 148: Write in exponent form:
$$1\,000 = \boxed{}$$

Ex 149: Write in exponent form:
$$0.01 = \boxed{}$$

Ex 150: Write in exponent form:
$$0.000\,1 = \boxed{}$$

K.2 EXPRESSING NUMBERS IN SCIENTIFIC NOTATION

Ex 151: Write in scientific notation:
$$123 = \boxed{} \times \boxed{}$$

Ex 152: Write in scientific notation:
$$1\,200 = \boxed{} \times \boxed{}$$

Ex 153: Write in scientific notation:
$$5\,000\,000 = \boxed{} \times \boxed{}$$

Ex 154: Write in scientific notation:
$$8\,100\,000\,000 = \boxed{} \times \boxed{}$$

Ex 155: Write in scientific notation:
$$0.05 = \boxed{} \times \boxed{}$$

Ex 156: Write in scientific notation:
$$0.12 = \boxed{} \times \boxed{}$$

Ex 157: Write in scientific notation:
$$0.000\,59 = \boxed{} \times \boxed{}$$

K.3 EXPRESSING IN DECIMAL FORM

Ex 158: Write in decimal form:
$$8.2 \times 10^2 = \boxed{}$$

Ex 159: Write in decimal form:
$$1.25 \times 10^3 = \boxed{}$$

Ex 160: Write in decimal form:
$$5 \times 10^6 = \boxed{}$$

Ex 161: Write in decimal form:
$$2 \times 10^{-2} = \boxed{}$$

Ex 162: Write in decimal form:
$$8.5 \times 10^{-1} = \boxed{}$$

Ex 163: Write in decimal form:
$$9.1 \times 10^{-5} = \boxed{}$$

K.4 EXPRESSING REAL-WORLD QUANTITIES IN SCIENTIFIC NOTATION

Ex 164: There are approximately 4 million red blood cells in a drop of blood. Write the quantity in scientific notation:
$$\boxed{} \times \boxed{} \text{ red blood cells}$$

Ex 165: There are approximately 3 billion stars in the galaxy. Write the quantity in scientific notation:
$$\boxed{} \times \boxed{} \text{ stars}$$

Ex 166: There are approximately 7.5 billion people on Earth. Write the quantity in scientific notation:
$$\boxed{} \times \boxed{} \text{ people}$$

Ex 167: The distance from the Earth to the Sun is approximately 150 million kilometers. Write the quantity in scientific notation:
$$\boxed{} \times \boxed{} \text{ kilometers}$$

L EXPONENTIAL EXPRESSION

L.1 SIMPLIFYING USING EXPONENT LAWS

Ex 168: Simplify:
$$3^{x-1} \times 3^{x+1} = \boxed{}$$

Ex 169: Simplify:
$$\frac{2^{x+2}}{2} = \boxed{}$$

Ex 170: Simplify:
$$\frac{4^{x+1}}{2^x} = \boxed{}$$

Ex 171: Simplify:
$$(2^x \cdot 3^x)^2 = \boxed{}$$

L.2 SIMPLIFYING EXPONENTIAL EXPRESSIONS

Ex 172: Simplify:

$$\frac{3^x + 6^x}{3^x} = \boxed{}$$

Ex 173: Simplify:

$$\frac{2^{x+2} + 2^x}{5} = \boxed{}$$

Ex 174: Simplify:

$$3^x(n+1) - 3^x = \boxed{}$$

Ex 175: Simplify:

$$\frac{4^x - 2^x}{2^x} = \boxed{}$$

L.3 EXPANDING AND SIMPLIFYING EXPONENTIAL EXPRESSIONS

Ex 176: Expand and simplify:

$$(2^x - 1)(2^x + 1) = \boxed{}$$

Ex 177: Expand and simplify:

$$(2^x - 1)^2 = \boxed{}$$

Ex 178: Expand and simplify:

$$(3^x + 3^{-x})^2 = \boxed{}$$

L.4 FACTORIZING EXPONENTIAL EXPRESSIONS

Ex 179: Factorize:

$$2^{2x} - 2^x = \boxed{}$$

Ex 180: Factorize:

$$3^{2x} - 2 \cdot 3^x + 1 = \boxed{}$$

Ex 181: Factorize:

$$(x+1)2^x - 2^{x+1} = \boxed{}$$

Ex 182: Factorize:

$$4^x - 3 \cdot 2^x + 2 = \boxed{}$$

M THE EXPONENTIAL NUMBER e

M.1 SIMPLIFYING USING EXPONENT LAWS

Ex 183: Simplify:

$$e^{x-1} \times e^{x+1} = \boxed{}$$

Ex 184: Simplify:

$$\frac{e^{x+2}}{e} = \boxed{}$$

Ex 185: Simplify:

$$\frac{\left(e^2\right)^{x+1}}{e^x} = \boxed{}$$

Ex 186: Simplify:

$$\left(e^x \cdot e^{2x}\right)^3 = \boxed{}$$

M.2 SIMPLIFYING EXPONENTIAL EXPRESSIONS

Ex 187: Simplify:

$$\frac{e^{2x} + e^x}{e^x} = \boxed{}$$

Ex 188: Simplify:

$$\frac{e^{x+1} - e^x}{e^x} = \boxed{}$$

Ex 189: Simplify:

$$\frac{e^{2x} - 1}{e^x - 1} = \boxed{}$$

M.3 EXPANDING AND SIMPLIFYING EXPONENTIAL EXPRESSIONS

Ex 190: Expand and simplify:

$$(e^x - 1)(e^x + 1) = \boxed{}$$

Ex 191: Expand and simplify:

$$(e^x + e^{-x})^2 = \boxed{}$$

Ex 192: Expand and simplify:

$$(e^x - e^{-x})^2 = \boxed{}$$

Ex 193: Expand and simplify:

$$(e^x + 2)(e^x - 3) = \boxed{}$$

M.4 FACTORIZING EXPONENTIAL EXPRESSIONS

Ex 194: Factorize:

$$e^{2x} - e^x = \boxed{}$$

Ex 195: Factorize:

$$e^{2x} - 2e^x + 1 = \boxed{}$$

Ex 196: Factorize:

$$xe^x - e^{x+1} = \boxed{}$$

Ex 197: Factorize:

$$e^{2x} - 3e^x + 2 = \boxed{}$$

N EXPONENTIAL EQUATIONS

N.1 SOLVING BY EQUATING INDICES: LEVEL 1

Ex 198: Solve for x: $2^x = 16$

Ex 199: Solve for x: $3^x = 27$

Ex 200: Solve for x: $2^x = \dfrac{1}{4}$

Ex 201: Solve for x: $5^x = \sqrt{5}$

Ex 202: Solve for x: $e^x = 1$

N.2 SOLVING BY EQUATING INDICES: LEVEL 2

Ex 203: Solve for x: $3^{x-2} = 81$

Ex 204: Solve for x: $5 \cdot 2^x = 40$

Ex 205: Solve for x: $4^x = 32$

Ex 206: Solve for x: $e^{2x} = e^x$

N.3 SOLVING BY EQUATING INDICES: LEVEL 3

Ex 207: Solve for x: $4^{x+1} = 8^{2x-2}$

Ex 208: Solve for x: $3^{2x+1} = 27 \cdot 3^{x-1}$

Ex 212: Solve for x: $e^{2x} + e^x - 2 = 0$

Ex 209: Solve for x: $2^{x^2} = 4^x$

N.4 SOLVING EQUATIONS IN QUADRATIC FORM

Ex 210: Solve for x: $4^x + 2^x - 20 = 0$

Ex 211: Solve for x: $e^{2x} - 2e^x + 1 = 0$