1 ID 5 Completing the Square

1. Which of the following expressions is an expansion of $(x+4)^2$?

   (a) $x^2 + 16$

   (b) $x^2 + 8x + 16$

   (c) $x^2 + 4x + 16$

   (d) I don't know yet.

2. Which of the following expressions is an expansion of $(2x-3)^2$?

   (a) $4x^2 - 12x + 9$

   (b) $4x^2 - 9$

   (c) $2x^2 - 12x + 9$

   (d) $4x^2 - 12x - 9$

   (e) I don't know yet.

3. Which of the expressions below is equivalent to $x^2 - 10x + 25$?

   (a) $(x-5)^2$

   (b) $(x+5)^2$

   (c) $(x+5)^2 + 20$

   (d) $(x-5)^2 + 20$

   (e) I don't know yet.

4. Which of the expressions below is equivalent to $x^2 - 6x + 34$?

   (a) $(x-6)^2$

   (b) $(x-3)^2$

   (c) $(x-3)^2 + 5^2$

   (d) $(x - \sqrt{34})^2$

   (e) I don't know yet.

2 ID10 Solving Linear Equations

1. What is the value for x, if $3x = 21$?

    (a) $x = 7$

    (b) $x = \frac{3}{21}$

    (c) $x = 18$

    (d) $x = -7$

    (e) I don't know yet.

2. What is the value for x, if $-4x = 12$?

    (a) $x = 3$

    (b) $x = -3$

    (c) $x = 8$

    (d) $x = 16$

    (e) I don't know yet.

3. What is the correct value for x, if $3 - x = 7$?

    (a) $x = 10$

    (b) $x = \frac{-7}{3}$

    (c) $x = 4$

    (d) $x = -4$

    (e) I don't know yet.

4. What is the correct value for x, if $3x - 2 = 13$?

    (a) $x = 15$

    (b) $x = 5$

    (c) $x = -5$

    (d) $x = \frac{11}{3}$

    (e) I don't know yet.

5. What is the correct value of x, if $3x = \frac{5}{2}$?

    (a) $x = \frac{15}{2}$

    (b) $x = \frac{\frac{5}{2}}{3}$

    (c) $x = -\frac{1}{2}$

    (d) $x = \frac{5}{6}$

    (e) I don't know yet.

3 ID11 Linear Equations Involving Fractions

1. What is the lowest common denominator in the following equation?

$$\frac{x}{6} - \frac{x}{2} = 5$$

   (a) 12

   (b) 6

   (c) 30

   (d) I don't know yet.

2. Which of the following is correct next progression in solving the equation?

$$\frac{x}{6} - \frac{x}{2} = 5$$

   (a) $2x - 6x = 5$

   (b) $2x - 6x = 60$

   (c) $2x - 6x = 30$

   (d) $x - 3x = 30$

   (e) I don't know yet.

3. What is appropriate next progression in solving the equation

$$\frac{x-1}{4} + \frac{2x}{3} = \frac{5}{2}$$

   (a) $3(x - 1) + 4(2x) = 6(5)$

   (b) $3(x - 1) + 4(2x) = 12(5)$

   (c) $6(x - 1 + 8(2x) = 12(5)$

   (d) $3(x - 1) + 4(2x) = \frac{5}{2}$

   (e) I don't know yet.

4 ID 13 Quadratic Equations Derived from Fractions

1. What is the lowest common denominator of the following equation:

$$\frac{2}{x} = \frac{3}{x+2} - \frac{5}{x^2}$$

   (a) $(x)(x + 2)(x^2)$

   (b) $(x + 2)(x^2)$

   (c) $(x)(x + 2)$

   (d) I don't know yet.

2. What is appropriate next step in solving the equation:

$$\frac{3}{x+1} + \frac{1}{x-1} = 2$$

   (a) $3(x-1) + 1(x+1) = 2$
   (b) $3(x+1) + 1(x-1) = 2(x+1)(x-1)$
   (c) $3(x-1) + 1(x+1) = 2(x+1)(x-1)$
   (d) I don't know yet.

3. What is appropriate next step in solving the equation:

$$\frac{10}{x-1} + \frac{12}{x+2} = \frac{7}{2}$$

   (a) $(2)(x+2)(10) + (12)(x-1)(2) = (7)(x-1)(x+2)$
   (b) $10(x+2) + 12(x-1) = \frac{7}{2}$
   (c) $10(x-1) + 12(x+2) = \frac{7}{2}$
   (d) I don't know yet.

5 ID 25 Equations with x as an Index: Quadratic Substitution, where $x \in Q$

1. If $y = 2^x$, express 2^{2x} in terms of y:
   (a) $2y$
   (b) $4y$
   (c) y^2
   (d) $y + 4$
   (e) I don't know yet.

2. If $y = 3^x$, express 3^{x+2} in terms of y:
   (a) y^2
   (b) $9y$
   (c) $2y$
   (d) $y + 2$
   (e) I don't know yet.

3. If $y = 2^x$, express the equation $2^{x+1} + 2^{-x} + 3 = 0$ in terms of y.
   (a) $2y + \frac{1}{y} + 3 = 0$
   (b) $y + 1 + \frac{1}{y} + 3 = 0$
   (c) $2y - y + 3 = 0$
   (d) $y^2 - y + 3 = 0$
   (e) I odn't know yet.

6 ID 27 Logarithmic Equations: Same Base

1. Which of the equations below is appropriate considering:

$$\log_2(3x + 1) = 2$$

   (a) $4 = 3x + 1$

   (b) $3x + 1 = 2$

   (c) $6x + 2 = 2$

   (d) I don't know yet.

2. Which of the following equations is appropriate considering:

$$\log_2(x - 2) + \log_2(x) = 3$$

   (a) $x - 2 + x = 3$

   (b) $x^2 - 2x = 3$

   (c) $x^2 - 2x = 8$

   (d) $x - 2 + x = 8$

   (e) I don't know yet.

3. Which of the equations below is appropriate considering:

$$\log(5x + 3) - \log(2) = 2\log(x)$$

   (a) $5x + 3 - 2 = 2x$

   (b) $\frac{5x+3}{2} = 2x$

   (c) $5x + 3 - 2 = x^2$

   (d) $\frac{5x+3}{2} = x^2$

   (e) I don't know yet.

7 ID 28 Logarithmic Equations Change of Base: Linear Format

1. What is the correct use of the change of base formula to advance the following equation:

$$\log_5(2x + 1) + \log_1 25(2x + 1) = 16$$

   (a) $\log_5(2x + 1) + \frac{\log_5(2x+1)}{\log_5 125} = 16$

   (b) $\log_5(2x + 1) + \frac{\log_5 125}{\log_5(2x+1)} = 16$

   (c) $\frac{\log_{125} 5}{\log_{125}(2x+1)} + \log_{125}(2x + 1) = 16$

   (d) I don't know yet.

2. What is an appropriate simplification of the following equation:

$$\log_2(x-1) - 2\log_2(x-1) = -3$$

(a) $\log_2(x-1) = 3$

(b) $-2\log_2(x-1)^2 = -3$

(c) $\log_2(x-1) = -3$

(d) I don't know yet.

8 ID 24 Equations with x as an index, where $x \in R$

1. What does x equal if

$$2^x = 17$$?

(a) $x = \frac{17}{2}$

(b) $x = \log_2 17$

(c) $x = \log_{17} 2$

(d) $x = 15$

(e) I don't know yet.

2. What is the correct value for x if $3^{x-2} = 100$?

(a) $x = \log_3 100 + 2$

(b) $x = \log_3 100 - 2$

(c) $x = \log_3 102$

(d) $x = \log_3 98$

(e) I don't know yet.

3. What is the correct value for x if $5^{3x} = 250$?

(a) $x = \frac{250}{15}$

(b) $x = \frac{\log_3 250}{5}$

(c) $x = \frac{\log_5 250}{3}$

(d) $x = \frac{\log_{250} 5}{3}$

(e) I don't know yet.

9 ID 26 Equations with x as an index: Quadratic Substitution where $x \in R$

1. If $y = 2^x$, express 2^{2x} in terms of y.

(a) $2y$

(b) $4y$

(c) y^2

(d) $y + 4$

(e) I don't know yet.

2. If $y = 3^x$, express the equation $3^{2x} + 3^{x+1} - 4 = 0$ in terms of y.

   (a) $y^2 + 3y - 4 = 0$

   (b) $2y + y + 1 - 4 = 0$

   (c) $9y + 3y - 4 = 0$

   (d) $y^2 + y + 1 - 4 = 0$

   (e) I don't know yet.

3. If $3^x = 4$, what is correct procedure for finding x?

   (a) $x = \frac{4}{3}$

   (b) $x = 4 - 3$

   (c) $x = \log_3 4$

   (d) $x = \log_4 3$

   (e) I don't know yet.

4. If $2^x = -8$, what is x?

   (a) $x = \frac{-8}{2}$

   (b) $x = -3$

   (c) $x = \log_2 8$

   (d) No solution

   (e) I don't know yet.

10 ID29 Logarithmic Equations: Change of bases, Qiadratic Format.

1. What is an appropriate use of the change of base formula to proceed in solving the following equation:

$$\log_2 x - \log_x 16 + 3 = 0$$

   (a) $\log_2 x - \frac{\log_2 x}{\log_2 16} + 3 = 0$

   (b) $\log_2 x - \frac{\log_2 16}{\log_2 x} + 3 = 0$

   (c) $\frac{\log_x 2}{\log_x x} - \log_x 16 + 3 = 0$

   (d) I don't know yet.