6/13/17

MOCK ALGEBRA FINAL

Name: Key

1. Factor the following

$$x^2 - 16$$

$(x+4)(x-4)$

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2. Solve for x

$$\frac{x-2}{8} = \frac{x+3}{9}$$

$9(x-2) = 8(x+3)$

$9x - 18 = 8x + 24$

$-8x \quad +18 \quad -8x \quad +18$

$x = 42$

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3. Simplify

$$3(x-2) + 8x(4x-1)$$

$3x - 6 + 32x^2 - 8x$

$32x^2 - 5x - 6$

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4. Which property is represented?

$$3 + 4 = 4 + 3$$

Commutative

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5. Simplify

$$(2x^3)^3$$

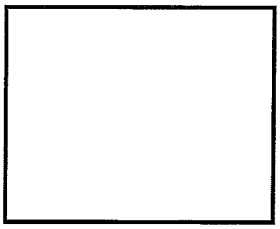
$(2^1 x^3)^3$

$2^3 x^9$

$8x^9$

6. Solve for x.

$$-8x + 4 \leq 28$$
$$-4 \quad -4$$
$$\frac{-8x}{-8} \leq \frac{24}{-8}$$
$$x \geq -3$$



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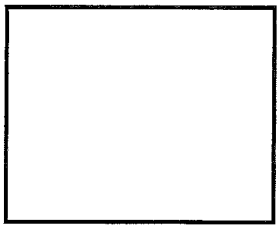
7. Solve for x.

$$|4x + 8| = 24$$

$4x + 8 = 24$ $\quad$ $4x + 8 = -24$
$-8 \quad -8$ $\quad$ $-8 \quad -8$
$\frac{4x}{4} = \frac{16}{4}$ $\quad$ $\frac{4x}{4} = \frac{-32}{4}$
$x = 4, -8$ $\quad$ $x = -8$



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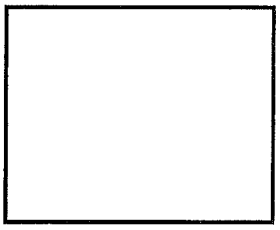
8. Solve the following system of equations

$$y = 2x + 8$$
$$2x + 3y = 10$$

$2x + 3(2x + 8) = 10$
$2x + 6x + 24 = 10$
$8x + 24 = 10$
$-24 \quad -24$
$\frac{8x}{8} = \frac{-14}{8}$
$x = \frac{-7}{4}$

$y = 2\left(\frac{-7}{4}\right) + 8$
$y = \frac{-14}{4} + \frac{32}{4}$
$y = \frac{18}{4}$

$\left(\frac{-7}{4}, \frac{18}{4}\right)$



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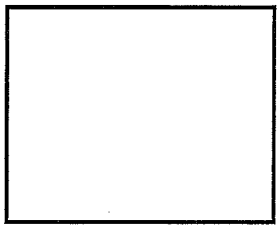
9. Simplify.

$$(8x^3)(2x^2)$$
$$16x^5$$



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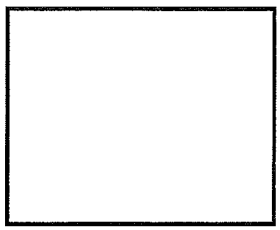
10. Simplify

$$2x^2(4x^3 - 2x)$$
$$8x^5 - 4x^3$$



11. Simplify using F.O.I.L.

$(3x - 8)(x + 2)$

$3x^2 + 6x - 8x - 16$

$3x^2 - 2x - 16$

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12. Find the vertex coordinates of the following

$\frac{-b}{2a} = \frac{-6}{3(2)} = \frac{-6}{6} = -1$

$y = 3x^2 + 6x + 9$

$y = 3(-1)^2 + 6(-1) + 9$

$y = 3 - 6 + 9$

$y = 6$

$(-1, 6)$

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13. Simplify

$\sqrt{180}$

$18 \cdot 10$

$9 \cdot 2 \cdot 5$

$3 \cdot 3 \cdot 2 \cdot 5$

$3 \cdot 2\sqrt{5}$

$6\sqrt{5}$

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14. Simplify

$3\sqrt{3} - 8\sqrt{3}$

$-5\sqrt{3}$

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15. Simplify

$(2x^2 + 3x - 4) - (3x^2 - 3x - 4)$

$-x^2 + 6x$

16. Determine the equation of a line through $(3,2)$ with a slope of $\frac{1}{3}$.

$y = mx + b$

$2 = \frac{1}{3}(3) + b$

$2 = 1 + b$

$b = 1$

$y = \frac{1}{3}x + 1$

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17. Determine the slope of a line through the given points $(2,-4), (3,1)$.

$m = \frac{y_2 - y_1}{x_2 - x_1}$

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

$m = 5$

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18. Simplify the following

$3 - (2 + 8) \div 5$

$3 - 10 \div 5$

$3 - 2$

1

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19. Find the difference.

$\frac{4}{4} \cdot \frac{2}{3} - (-\frac{1}{4}) \cdot \frac{3}{3}$

$\frac{8}{12} - \frac{-3}{12} = \frac{11}{12}$

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20. Solve for x.

$\frac{5}{3} \cdot \frac{3}{5}x = \frac{15}{1} \cdot \frac{5}{3}$

$x = 75$