Name: Answer key Date: _____

Intermediate Algebra Review for Exam 2

1) Simplify the expression: $3x - 2(x - 5)$

$3x - 2x + 10$

$x + 10$

2) Simplify the expression: $\frac{2}{3}(9x^2 + 6x) + 7x$

$6x^2 + 4x + 7x$

$6x^2 + 11x$

3) Simplify: $4x - [3x + 6(9 - 2x) - 1]$

$4x - [3x + 54 - 12x - 1] \rightarrow 4x - [53 - 9x]$

$4x - 53 + 9x$

$13x - 53$

4) Find the sum of $(3a + 6ab - 8b)$ and $(-2a + 10ab - 6b)$

Add!

$a + 16ab - 14b$

5) Subtract $(3x - 10)$ from $(7x^2 + x + 15)$

1st

$7x^2 + x + 15$ keep

Change + $-3x + 10$ change

$7x^2 - 2x + 25$

6) Subtract: $(-9x^2 + 4x + 1) - (6x^2 - 5x + 10)$

$-9x^2 + 4x + 1 - 6x^2 + 5x - 10$

$-15x^2 + 9x - 9$

7) Multiply $(x + 5)(x - 6)$

$x^2 - 6x + 5x - 30$

$x^2 - x - 30$

8) Multiply $(2x + 3)(3x - 5)$

$6x^2 - 10x + 9x - 15$

$6x^2 - x - 15$

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9) Divide $(25x^3 + 10x^2 - 5x)$ by $5x$

$\frac{25x^3}{5x} + \frac{10x^2}{5x} - \frac{5x}{5x}$

$5x^2 + 2x - 1$

10) Divide: $\frac{-18x^4y^2+24x^3y-6x^2y^3}{-3xy}$ $= \frac{-18x^4y^2}{-3xy} + \frac{24x^3y}{-3xy} - \frac{6x^2y^3}{-3xy} = 6x^3y - 8x^2 + 2xy$

11) Evaluate $3x^2y - 2xy^2$ when $x = -2$ and $y = 5$.

$3(-2)^2(5) - 2(-2)(5)^2 = 160$

12) Given $f(x) = \frac{2}{5}x^2 + 4$, evaluate $f(10)$.

$f(10) = \frac{2}{5}(10)^2 + 4 = 44$

13) If $g(x) = 3 + x|x - 6|$, find $g(-1)$.

$g(-1) = 3 + (-1)|(-1 - 6)| = -4$

14) Solve and check: $\frac{x}{6} - 10 = -15$

$+10 \quad +10$

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

$x = -30$

Check

$\frac{x}{6} - 10 = -15$

$\frac{(-30)}{6} - 10 = -15$

$-15 = -15$ ✓

15) Solve and check: $2x - 5 + 7x = 11 - 3x + 4x$

$9x - 5 = 11 + x$

$-x \quad -x$

$8x - 5 = 11$

$+5 \quad +5$

$\frac{8x}{8} = \frac{16}{8}$

$x = 2$

Check

$2x - 5 + 7x = 11 - 3x + 4x$

$2(2) - 5 + 7(2) = 11 - 3(2) + 4(2)$

$13 = 13$ ✓

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16) Solve and check: $\frac{2}{3}(15-6a)=\frac{5}{6}(12a+18)$

$10-4a=10a+15$

$+4a \quad +4a$

$10=14a+15$

$-15 \quad -15$

$\frac{-5}{14}=\frac{14a}{14}$

$\frac{-5}{14}=a$

Check

$\frac{2}{3}(15-6a)=\frac{5}{6}(12a+18)$

$\frac{2}{3}(15-6(\frac{-5}{14}))=\frac{5}{6}(12(\frac{-5}{14})+18)$

$\frac{80}{7}=\frac{80}{7}$ ✓

17) Solve for m: $3n-2m=5$

$-3n \quad -3n$

$\frac{-2m}{-2}=\frac{5-3n}{-2}$

$m=\frac{5-3n}{-2}$

18) Solve for x: $2x+6y=18$

$-6y \quad -6y$

$\frac{2x}{2}=\frac{18-6y}{2}$

$x=9-3y$

19) Solve for H: $V=LWH$

$\frac{V}{LW}=\frac{LWH}{LW}$

$\frac{V}{LW}=H$

20) Solve for a: $\frac{a-5}{b}=c$ (b)

$a-5=cb$

$+5 \quad +5$

$a=cb+5$

21) Solve and graph the solution. Write the solution in interval notation.

$5(x-2)\geq 9x-3(2x-4)$

$5x-10\geq 9x-6x+12$

$5x-10\geq 3x+12$

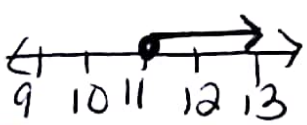
$-3x \quad -3x$

$2x-10\geq 12$

$+10 \quad +10$

$\frac{2x}{2}\geq\frac{22}{2}$

$x\geq 11$



$[11,\infty)$

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22) Solve and graph the solution. Write the solution in set-builder notation.

$5x - 2 \le 4 - 3(x - 2)$

$5x - 2 \le 4 - 3x + 6$

$5x - 2 \le -3x + 10$

$+3x \quad +3x$

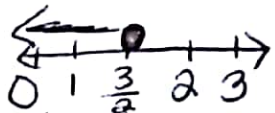
$8x - 2 \le 10$

$+2 \quad +2$

$\frac{8x}{8} \le \frac{12}{8}$

$x \le \frac{3}{2}$

$\{x \mid x \le \frac{3}{2}\}$



23) Solve and graph the solution. Write the solution set in interval notation.

$2 - 5(x + 1) > 3(x - 1) - 8$

$2 - 5x - 5 > 3x - 3 - 8$

$-5x - 3 > 3x - 11$

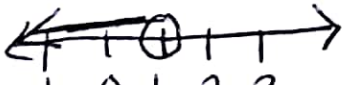
$+5x \quad +5x$

$-3 > 8x - 11$

$+11 \quad +11$

$\frac{8}{8} > \frac{8x}{8}$

$1 > x$ or $x < 1$



24) Solve and check: $|2x - 1| = 3$

Positive: $2x - 1 = 3$, $+1 \quad +1$, $\frac{2x}{2} = \frac{4}{2}$, $x = 2$

Negative: $-(2x - 1) = 3$, $-2x + 1 = 3$, $-1 \quad -1$, $\frac{-2x}{-2} = \frac{2}{-2}$, $x = -1$

Check

$|2x - 1| = 3$

$|2(2) - 1| = 3$

$3 = 3$ ✓

$|2x - 1| = 3$

$|2(-1) - 1| = 3$

$3 = 3$ ✓

25) Solve and Check: $|3x + 6| = +6$

Positive: $3x + 6 = -6$, $-6 \quad -6$, $\frac{3x}{3} = \frac{-12}{3}$, $x = -4$

Negative: $-(3x + 6) = -6$, $-3x - 6 = -6$, $+6 \quad +6$, $\frac{-3x}{-3} = \frac{0}{-3}$, $x = 0$

Check

$|3x + 6| = +6$

$|3(-4) + 6| = +6$

$+6 = +6$ ✓

$|3x + 6| = +6$

$|3(0) + 6| = +6$

$6 = 6$ ✓

26) Solve and check: $2x + |x| = -3$

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

$2x - (x) = -3$, $x = -3$

Check

$2x + |x| = -3$

$2(-1) + |-1| = -3$

$-2 - 1 = -3$

$-3 = -3$ ✓

$2x + |x| = -3$

$2(-3) + |-3| = -3$

$-6 + 3 = -3$

$-3 = -3$ ✓

27) Solve and check: $|2a - 4| + 6a = 12$

$-(2a - 4) + 6a = 12$

$-2a + 4 + 6a = 12$

$4a + 4 = 12$

$-4 \quad -4$

$\frac{4a}{4} = \frac{8}{4}$, $a = 2$

$2a - 4 + 6a = 12$

$8a - 4 = 12$

$+4 \quad +4$

$\frac{8a}{8} = \frac{16}{8}$, $a = 2$

Check

$|2a - 4| + 6a = 12$

$|2(2) - 4| + 6(2) = 12$

$12 = 12$ ✓

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