August 24, 2016 Math 116 - Quiz 0 Name ANSWERS

Write an equation for each line. Write in slope-intercept form: $y = mx + b$.

1. Through $(1, -4)$; $m = 3$

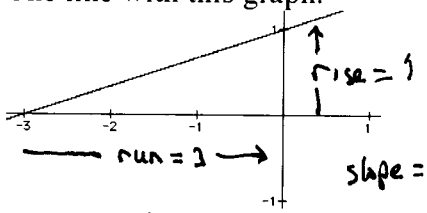
$y = 3x + b$

$-4 = 3(1) + b$ is true so

$-4 = 3 + b \Rightarrow b = -7$

$\boxed{y = 3x - 7}$

2. The line with this graph.



$\text{slope} = \frac{\text{rise}}{\text{run}} = \frac{1}{3}$

y-intercept $= (0, b) = (0, 1)$

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

Write the rational expression in lowest terms.

3. $\dfrac{x^2 + 2x - 15}{x^2 + 6x + 5} = \dfrac{(x+5)(x-3)}{(x+5)(x+1)}$

$= \boxed{\dfrac{x-3}{x+1}}$

Multiply.

4. $(x+3)(x^2 + 6x + 9)$

$x^2 + 6x + 9$

$x + 3$

$3x^2 + 18x + 27$

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

$\boxed{x^3 + 9x^2 + 27x + 27}$

Solve.

5. $x^2 - 10x + 21 = 0$

$(x-7)(x-3) = 0$

$x - 7 = 0$ or $x - 3 = 0$

$\boxed{x = 7 \text{ or } x = 3}$

Rewrite using only positive exponents and simplify.

6. $\dfrac{(a^{-3}b^2)^2}{(2a^{-4}b^{-3})^{-1}} = \dfrac{(a^{-3})^2 (b^2)^2}{2^{-1}(a^{-4})^{-1}(b^{-3})^{-1}}$

$= \dfrac{a^{-6} b^4}{2^{-1} a^4 b^3} = \dfrac{2b^4}{a^6 a^4 b^3}$

$= \boxed{\dfrac{2b}{a^{10}}}$

Subtract. Write the answer in lowest terms.

7. $\dfrac{x}{x-2} - \dfrac{8}{x^2 - 4}$

$= \dfrac{x}{(x-2)} \cdot \dfrac{(x+2)}{(x+2)} - \dfrac{8}{(x-2)(x+2)}$

$= \dfrac{x^2 + 2x - 8}{(x-2)(x+2)} = \dfrac{(x-2)(x+4)}{(x-2)(x+2)}$

$= \boxed{\dfrac{x+4}{x+2}}$

Factor completely.

8. $10x^2 - 17x + 3$

Step 1: $ac = 10 \cdot 3 = 30$

Step 2: Find p, q so that i) $pq = 30$ and ii) $p + q = -17$ so $\begin{cases} p = -15 \\ q = -2 \end{cases}$

Step 3: $10x^2 - 15x - 2x + 3$

Step 4 $= (10x^2 - 15x) + (-2x + 3)$

$= 5x(2x - 3) - 1(2x - 3)$

$= \boxed{(5x - 1)(2x - 3)}$