

Math 80 Test 4 Practice test 1 Fall 2015

Fill in the blanks using the words term, factor, sum, product, difference, quotient, base, exponent, power, index, radicand or root.

- 1) Solve  $-2|2t| + 11 \geq 7$  Expression your answer as a graph.

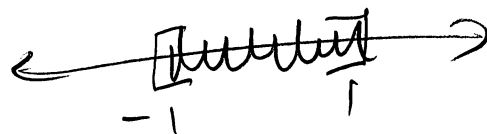
$$-2|2t| + 11 \geq 7$$

$$-2|2t| \geq -4$$

$$|2t| \leq 2$$

$$-2 \leq 2t \leq 2$$

$$-1 \leq t \leq 1$$



- 2) Simplify  $\frac{m^3 - m^2 - 16m + 16}{7m + 28} \times \frac{m + 7}{m^2 - 5m + 4}$

$$m^3 - m^2 - 16m + 16$$

$$m^2(m - 1) - 16(m - 1)$$

$$(m^2 - 16)(m - 1)$$

$$(m - 4)(m + 4)(m - 1)$$

$$m^2 - 5m + 4$$

$$(m - 4)(m - 1)$$

$$\frac{m + 7}{7}$$

$$\frac{(m - 4)(m + 4)(m - 1)}{7(m + 4)} \times \frac{m + 7}{(m - 4)(m - 1)}$$

- 3) Factor  $8a^2 + 37ab - 15b^2$  completely.

$$AC = -2 \cdot 2 \cdot 2 \cdot 3 \cdot 5$$

$$b = 37$$

$$1 \cdot 120 \quad 10 \cdot 12$$

$$2 \cdot 60$$

$$3 \cdot 40$$

$$4 \cdot 30$$

$$5 \cdot 24$$

$$6 \cdot 20$$

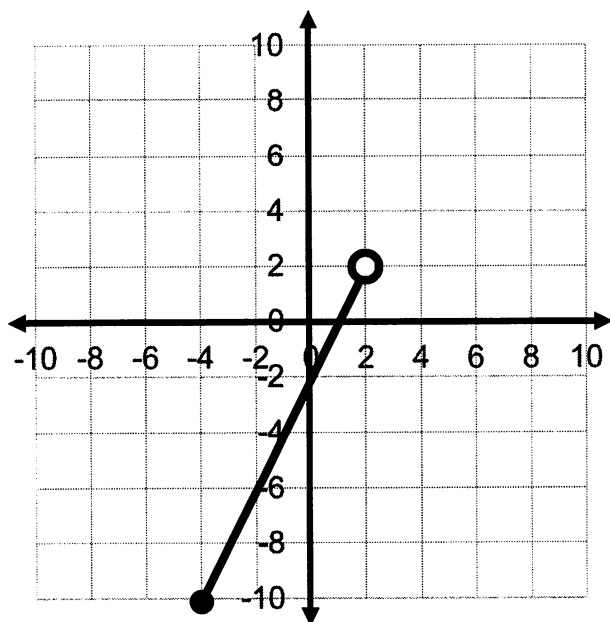
$$8 \cdot 15$$

$$8a^2 - 3ab + 40ab - 15b^2$$

$$a(8a - 3b) + 5b(8a - 3b)$$

$$(8a - 3b)(a + 5b)$$

4) Given this is the graph of function  $g(t)$ .



e) What's the domain of  $g(t)$  ?

$$[-4, 2)$$

$$(-4, -10) \quad (2, 2)$$

f) What's the range of  $g(t)$  ?

$$[-10, 2)$$

$$m = \frac{-10 - 2}{-4 - 2} = \frac{-12}{-6} = 2$$

g) Complete the description of  $g(t)$

$$g(t) = \begin{cases} 2t - 2, & -4 \leq t < 2 \end{cases}$$

$$y = mx + b$$

$$2 = 2(2) + b$$

$$2 = 4 + b$$

$$-2 = b$$

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

h) Find  $\frac{g(-1) + g(-2)}{g(1)}$

$$g(-1) = -4$$

$$g(-2) = -6$$

$$g(1) = 0$$

undefined

$$\frac{-4 + -6}{0}$$

i) Find  $g(7)$

outside of the domain. Value is unknown.

6) Given  $\frac{2y+9}{y^2-7y+12} - \frac{2}{y-3}$

$$y^2 - 7y + 12$$

$$(y-3)(y-4)$$

For the following questions circle or supply the correct answer(s).

a. You have a(n)?

Equation

Expression

b. What's the LCD?

$$(y-3)(y-4)$$

c. How will you use the LCD?

Distribute and reduce

Build equivalent fractions

d. Do you expect to have an LCD when you've finished?

Yes

No

e. If you have an equation, what values are excluded from the solution set? \_\_\_\_\_

Simplify or solve the original problem. If you solve, check your solution(s).

$$\frac{2y+9}{(y-3)(y-4)} - \frac{2(y-4)}{(y-3)(y-4)}$$

$$\frac{\cancel{2y}+9-\cancel{2y}+8}{(y-3)(y-4)}$$

$$\frac{17}{(y-3)(y-4)}$$

7) Given  $\frac{2x-1}{x^2+2x-8} + \frac{2}{x+4} = \frac{1}{x-2}$

$$x^2 + 2x - 8$$

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

For the following questions circle or supply the correct answer(s).

a. You have a(n)? Equation Expression

b. What's the LCD?  $(x+4)(x-2)$

c. How will you use the LCD? Distribute and reduce Build equivalent fractions

d. Do you expect to have an LCD when you've finished? Yes No

e. If you have an equation, what values are excluded from the solution set? -4 & 2

Simplify or solve the original problem. If you solve, check your solution(s).

$$\left(\frac{(x-2)(x+4)}{1}\right) \left(\frac{2x-1}{(x-2)(x+4)} + \frac{2}{x+4}\right) = \frac{(x-2)(x+4)}{1} \left(\frac{1}{x-2}\right)$$

$$2x-1 + 2(x-2) = x+4$$

$$2x-1 + 2x-4 = x+4$$

$$4x-5 = x+4$$

$$3x = 9$$

$$\boxed{x=3}$$

not excluded

check

$$\frac{5}{9+6-8} + \frac{2}{7}$$

$$\frac{5}{7} + \frac{2}{7}$$

$$\frac{7}{7}$$

$$1$$

$$\frac{1}{1}$$

✓

8) Given  $\frac{\frac{2}{x+3} + \frac{5x}{x^2-9}}{\frac{4}{x+3} + \frac{2}{x-3}}$

For the following questions circle or supply the correct answer(s).

a. You have a(n)?

Equation

Expression

b. What's the LCD?  $(x-3)(x+3)$

c. How will you use the LCD?

Distribute and reduce

Build equivalent fractions

d. Do you expect to have an LCD when you've finished?

Yes

No

e. If you have an equation, what values are excluded from the solution set? \_\_\_\_\_

Simplify or solve the original problem. If you solve, check your solution(s).

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

$$\frac{2(x-3) + 5x}{4(x-3) + 2(x+3)} \Rightarrow \frac{2x-6+5x}{4x-12+2x+6} \Rightarrow \frac{7x-6}{6x-6}$$

$$\frac{7x-6}{6(x-1)}$$

9) Simplify or solve  $\frac{4}{x-9} - \frac{2x-1}{x-3} = \frac{-2x^2+25}{x^2-12x+27}$ .

If you're going to solve,

- List any excluded values.
- It's **not** necessary to check your solution.

$x^2 - 12x + 27$  excluded values  $x \neq 3, x \neq 9$   
 $(x-9)(x-3)$

$$\left( \frac{(x-9)(x-3)}{1} \right) \left( \frac{4}{x-9} - \frac{2x-1}{x-3} \right) = \left( \frac{-2x^2+25}{(x-9)(x-3)} \right) \left( \frac{(x-9)(x-3)}{1} \right)$$

$$4(x-3) - (x-9)(2x-1) = -2x^2 + 25$$

$$4x - 12 - (2x^2 - 19x + 9) = -2x^2 + 25$$

$$4x - 12 - 2x^2 + 19x - 9 = -2x^2 + 25$$

$$23x - 21 = 25$$

$$\boxed{x = 2}$$

Check (I always check)

$$\frac{4}{-7} - \frac{3}{-1}$$

$$-\frac{4}{7} + \frac{21}{7} = \frac{17}{7}$$

$$\frac{-8+25}{7}$$

$$\frac{17}{7} \checkmark$$

10) Divide  $(x^3 + 2x^2 - 2x - 88) \div (x - 4)$ . Also check your work using multiplication.

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$$\begin{array}{r} x^2 + 6x + 22 \\ x-4 \overline{) x^3 + 2x^2 - 2x - 88} \\ \underline{-x^3 + 4x^2} \phantom{-2x - 88} \\ 6x^2 - 2x \phantom{- 88} \\ \underline{-6x^2 + 24x} \phantom{- 88} \\ 22x - 88 \\ \underline{-22x + 88} \\ 0 \end{array}$$

$$(x^2 + 6x + 22)(x - 4)$$

$$\cancel{x^3} - \cancel{4x^2} + 6x^2 - \cancel{24x} + 22x - 88$$

$$x^3 + 2x^2 - 2x - 88 \checkmark$$

11) A grocer needs to mix m&m's which cost \$2 per pound with peanuts, which cost \$0.50 per pound, to make 100 pounds of a "Trail Mix" which costs \$0.95 per pound. How many pounds of m&m's and how many pounds of peanuts should be used? You must use a system of equations to answer the question.

$$\text{M\&M's} \left( \frac{\$2}{1 \text{ lb.}} \right) \text{ peanuts} \left( \frac{\$0.50}{1 \text{ lb.}} \right) \text{ Mix} \left( \frac{\$0.95}{1 \text{ lb.}} \right)$$

I need  $\frac{30}{70}$  pounds of m&m's  
 " " " " " peanuts.

M = pounds of M&M's      P = pounds of peanuts

$$\underbrace{\text{pounds of M\&M's}}_M + \underbrace{\text{pounds of peanuts}}_P = \text{pounds of mixture} = 100$$

cost of m&m's + cost of peanuts = cost of mixture

$$\left( \frac{\$2}{1 \text{ pound}} \right) \left( \frac{M \text{ pounds}}{1} \right) + \left( \frac{\$0.50}{1 \text{ pound}} \right) \left( \frac{P \text{ pounds}}{1} \right) = \left( \frac{\$0.95}{1 \text{ lb.}} \right) (100 \text{ Pounds})$$

$$2M + 0.5P = 0.95(100)$$

$$M + P = 100 \Rightarrow \boxed{P = 100 - M}$$

$$2M + 0.5(100 - M) = 95$$

$$2M + 50 - 0.5M = 95$$

$$1.5M = 45$$

$$\boxed{M = 30}$$

$$\boxed{P = 70}$$

check

$$30 + 70 = 100 \checkmark$$

$$\$2(30) + .5(70) = .95(100)$$

$$60 + 35$$

$$95$$

$$95 \checkmark$$