

**Algebra 2: Cumulative Review Homework 13**

1. Solve:  $-\frac{3}{5}x - \frac{4}{5} = \frac{4}{5} - \frac{3}{4}x$

- a. 0  
 b.  $10\frac{2}{3}$   
 c.  $-1\frac{5}{27}$   
 d.  $-10\frac{2}{3}$
- $20\left(-\frac{3}{5}x\right) - 20\left(\frac{4}{5}\right) = 20\left(\frac{4}{5}\right) - 20\left(\frac{3}{4}x\right)$   
 $-12x - 16 = 16 - 15x$   
 $3x - 16 = 16$   
 $3x = 32$   
 $x = 32/3 = 10\frac{2}{3}$

2. Simplify completely:  $\frac{4}{22 + \sqrt{13}} \cdot \frac{22 - \sqrt{13}}{22 - \sqrt{13}}$

- a.  $\frac{88 - 4\sqrt{13}}{471}$   
 b.  $\frac{88 + 4\sqrt{13}}{-471}$   
 c.  $\frac{22 - \sqrt{13}}{471}$   
 d.  $\frac{88 + 4\sqrt{13}}{471}$
- $= \frac{4(22 - \sqrt{13})}{484 - 13}$   
 $= \frac{88 - 4\sqrt{13}}{471}$

3. Solve by any method:

$\begin{cases} 3x + 3y = -\frac{1}{4} \\ \frac{x}{3} - 2y = 1 - x \end{cases} \cdot 4$

$\begin{cases} 12x + 12y = -1 \\ x - 2y = 3 - 3x \end{cases} \cdot 3$

$\begin{cases} 12x + 12y = -1 \\ x - 6y = 3 - 3x \end{cases}$   
 $\xrightarrow{x-3} \begin{cases} 12x + 12y = -1 \\ -12x + 18y = -9 \end{cases}$

$\begin{cases} 12x + 12y = -1 \\ -12x + 18y = -9 \end{cases}$   
 $30y = -10$   
 $y = -1/3$

a.  $\left(\frac{1}{4}, -\frac{1}{3}\right)$   
 b.  $\left(-\frac{1}{4}, \frac{1}{3}\right)$   
 c.  $\left(\frac{1}{3}, -\frac{1}{4}\right)$   
 d.  $\left(\frac{1}{4}, \frac{1}{3}\right)$

4. Factor completely:  $5x^2 - 22x - 15$

- a.  $(5x + 3)(x + 5)$   
 b.  $(x + 3)(5x - 5)$   
 c.  $(5x + 3)(x - 5)$   
 d.  $(5x - 5)(x - 3)$

5. Factor completely:  $16x^2 + 40x + 25$

- a.  $(4x - 5)^2$   
 b.  $(4x + 5)(-4x - 5)$   
 c.  $(4x + 5)^2$   
 d.  $(-4x + 5)^2$
- $(4x + 5)(4x + 5)$

6. Factor completely:  $x^3 + 216$

- a.  $(x - 6)(x^2 + 6x + 36)$   
 b.  $(x + 6)(x^2 - 6x + 36)$   
 c.  $(x - 6)(x^2 - 6x + 36)$   
 d.  $(x + 6)(x^2 + 6x + 72)$
- $(x + 6)(x^2 - 6x + 36)$

7. Solve by factoring.

$4x^2 + 28x - 32 = 0$

- a.  $8, -\frac{1}{2}$   
 b.  $-8, 4$   
 c.  $-8, 1$   
 d.  $1, -\frac{1}{2}$
- $4(x^2 + 7x - 8) = 0$   
 $4(x + 8)(x - 1) = 0$   
 $x + 8 = 0 \quad x - 1 = 0$   
 $x = -8 \quad x = 1$

8. Simplify  $\sqrt{-175}$  using the imaginary number  $i$ .

- a.  $i\sqrt{175}$   
 b.  $5i\sqrt{7}$   
 c.  $5\sqrt{-7}$   
 d.  $-5\sqrt{7}$
- $\sqrt{(-1) \cdot 5 \cdot 5 \cdot 7}$   
 $= 5i\sqrt{7}$

9. Write the number in the form  $a + bi$ :  $\sqrt{-4} + 10$

- a.  $4 + 10i$   
 b.  $10 + i\sqrt{4}$   
 c.  $10 + 2i$   
 d.  $2 + 10i$
- $2i + 10$   
 $= 10 + 2i$

Name: \_\_\_\_\_

can also graph, find vertex  
 (-3, -4) and find answer

ID: A

10. Simplify completely:  $\sqrt[3]{-\frac{125}{343}}$
- a.  $\frac{25}{49}$
- b.  $-\frac{125}{343}$
- c.  $-\frac{125}{1029}$
- d.  $-\frac{5}{7}$
- Handwritten work:*  
 $\sqrt[3]{\frac{(-1) \cdot 5 \cdot 5 \cdot 5}{7 \cdot 7 \cdot 7}} = \frac{5}{7}(-1)$

11. Simplify completely:  $\frac{\sqrt{90x^{18}}}{\sqrt{2x}}$
- a.  $3x^8\sqrt{5x}$
- b.  $\sqrt{18x^{17}}$
- c.  $5x\sqrt{3x^8}$
- d. none of these
- Handwritten work:*  
 $\sqrt{\frac{90}{2} x^{17}} = \sqrt{45x^{17}} = \sqrt{9 \cdot 5 x^{17}} = 3x^8\sqrt{5x}$

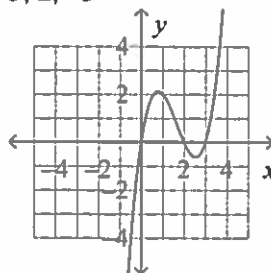
12. Write in logarithmic form:  $6^4 = 1,296$
- a.  $\log_6 1,296 = 4$
- b.  $\log 1,296 = 4$
- c.  $\log 1,296 = 4 \cdot 6$
- d.  $\log_4 1,296 = 6$
- Handwritten note:* omit

13. Solve by graphing:  $-8x^3 - 13x^2 + 6x = 0$
- a. no solution
- b. -2, 0.38
- c. 0, 2, -0.38
- d. 0, -2, 0.38
- Handwritten work:*  
 $x = .375$   
 $x = -2$   
 $x = 0$

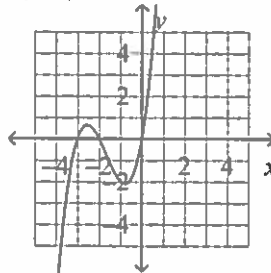
14. Identify the vertex and the y-intercept of the graph of the function  $y = -3(x + 2)^2 + 5$ .
- a. vertex: (-2, 5); y-intercept: -7
- b. vertex: (2, -5); y-intercept: -12
- c. vertex: (2, 5); y-intercept: -7
- d. vertex: (-2, -5); y-intercept: 9
- Handwritten work:*  
 ↓ Vertex (-2, 5)  
 y-int ⇒ x=0  
 from table (or by plugging in)  
 y = -7

15. Write  $y = 2x^2 + 12x + 14$  in vertex form.
- a.  $y = 2(x + 12)^2 + 14$
- b.  $y = 6(x + 9)^2 - 4$
- c.  $y = (x + 3)^2 + 14$
- d.  $y = 2(x + 3)^2 - 4$
- Handwritten work:*  
 $y = 2(x^2 + 6x + 9) + 14$   
 $= 2(x^2 + 6x + 9) + 14$   
 $= 2(x+3)^2 - 4$

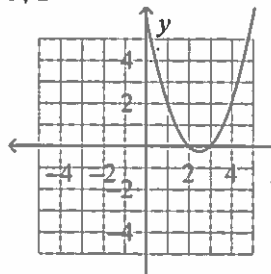
16. Find the zeros of  $y = x(x - 3)(x - 2)$ . Then graph the equation.
- a. 3, 2, -3
- Handwritten work:*  
 $x = 0$   
 $x - 3 = 0 \Rightarrow x = 3$   
 $x - 2 = 0 \Rightarrow x = 2$



- b. 0, -3, -2



- c. 3, 2



- d. 0, 3, 2

