
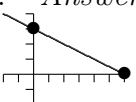
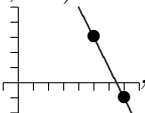
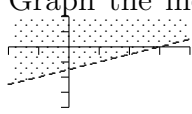
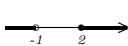


## Final Exam Review A

Math 105

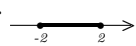

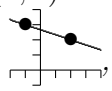
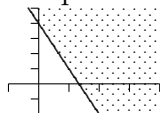

Problems on Final will be in a different order than on this review.

1. Solve  $2 - (x - 1) = 2(5 - x) + 7$ . *Answer:*  $x = 14$
2. Solve  $|x + 3| = 4$ . *Answer:*  $x = -7$  and  $x = 1$
3. Graph the solution to the inequality  $-1 < 2 - x < 3$ . *Answer:*  $(-1, 3)$  or 
4. Simplify  $(x^2x^{-3})^{-2}$ . *Answer:*  $x^2$
5. Simplify  $(2ab^2)^3(a^{-2}b)$ . *Answer:*  $8ab^7$
6. Find the slope and  $y$ -intercept of the line  $x + 2y = 6$  and sketch its graph. *Answer:* slope is  $-\frac{1}{2}$  and  $y$ -intercept is  $(0, 3)$  
7. Graph the line determined by the points  $(5, 3)$  and  $(7, -1)$  and find the slope of the line. *Answer:*   $m = -2$
8. If  $f(x) = x^2 + 1$ , then find  $f(-6)$  and  $f(x - 1)$ . *Answer:*  $37$  and  $x^2 - 2x + 2$
9. Graph the inequality  $2x - 4y < 6$ . *Answer:* 
10. State the domain and range of the relation  $\{(-1, 4), (2, 3), (-4, 5), (2, -5)\}$ .  
Is this relation a function? *Answer:* Domain =  $\{-1, 2, -4\}$ , Range =  $\{-5, 3, 4, 5\}$ , Not a function
11. Subtract and simplify  $(2x^2 - 6x + 1) - (3x^2 - x - 1)$ . *Answer:*  $-x^2 - 5x + 2$
12. Multiply and simplify  $(x - 2)(x + 2)$ . *Answer:*  $x^2 - 4$
13. Factor completely  $x^2 - x - 6$ . *Answer:*  $(x - 3)(x + 2)$
14. Factor completely  $xy + 2x - 3y - 6$ . *Answer:*  $(x - 3)(y + 2)$
15. Solve  $2x^2 + 5x - 3 = 0$ . *Answer:*  $x = 1/2$ ,  $x = -3$
16. Divide and simplify:  $\frac{x^2 - 4x - 5}{2x^2 + x - 1} \div \frac{2x - 10}{2x^2 - 3x + 1}$  *Answer:*  $\frac{x-1}{2}$
17. Combine and simplify:  $\frac{2x}{x+1} + \frac{3}{x+5}$  *Answer:*  $\frac{2x^2+13x+3}{(x+1)(x+5)}$
18. Simplify  $\frac{\frac{2}{x} - 2}{\frac{x}{4} - 2}$ . *Answer:*  $\frac{1-x}{2-x}$
19. Solve  $\frac{x}{6} - \frac{1}{7} = \frac{1}{42}$ . *Answer:*  $x = 1$
20. Solve and graph the solution set of  $\frac{x-2}{x+1} \geq 0$ . *Answer:* 
21. Simplify  $\sqrt[3]{16x^4y^5}$ . *Answer:*  $2xy\sqrt[3]{2xy^2}$
22. Combine and Simplify  $\frac{x^{\frac{1}{2}}x^{\frac{1}{3}}}{x^{\frac{2}{3}}}$ . *Answer:*  $x^{1/6}$
23. Combine and simplify  $2\sqrt{18x^3} + x\sqrt{50x} - \sqrt{32x^3}$ . *Answer:*  $7x\sqrt{2x}$
24. Subtract  $(5 - 2i) - (3 - 2i)$ . *Answer:*  $2$
25. Multiply and simplify  $(1 + i)(2 + i)$ . *Answer:*  $1 + 3i$
26. Solve  $(x + 2)^2 = 3$ . *Answer:*  $x = -2 \pm \sqrt{3}$
27. Solve  $x^2 + 6x + 3 = 0$  by completing the square. *Answer:*  $x = -3 \pm \sqrt{6}$
28. Solve  $x^2 + 2x + 3 = 0$  using the quadratic formula. *Answer:*  $x = -1 \pm i\sqrt{2}$
29. Solve  $\sqrt{2x - 3} = 6$ . *Answer:*  $x = \frac{39}{2}$
30. Solve  $2x^{\frac{2}{3}} - 3x^{\frac{1}{3}} + 1 = 0$ . *Answer:*  $x = \frac{1}{8}$ ,  $x = 1$

## Final Exam Review B

Math 105

Show all of your work on exam.

1. Solve  $2(x - 6) + 3 = 7 - 3(2 - x)$ . *Answer:*  $x = -10$
2. Solve  $|x - 2| = 12$ . *Answer:*  $x = -10$  and  $x = 14$
3. Graph the solution to the inequality  $-3 \leq 1 - 2x \leq 5$ . *Answer:*  $[-2, 2]$  or 
4. Simplify  $\left(\frac{x^{-3}}{x^2}\right)^2$ . *Answer:*  $\frac{1}{x^{10}}$
5. Simplify  $\left(\frac{2ab^2}{a^2b}\right)^{-2}$ . *Answer:*  $\frac{a^2}{4b^2}$
6. Locate the  $x$ -intercept and  $y$ -intercept of the line  $3x + y = 2$  and sketch its graph. *Answer:*  $x$ -intercept is  $(\frac{2}{3}, 0)$  and  $y$ -intercept is  $(0, 2)$  
7. Graph the line determined by the points  $(-1, 3)$  and  $(2, 2)$  and find the slope of the line. *Answer:*   $m = -\frac{1}{3}$
8. If  $f(x) = 3x - 1$ , then find  $f(3)$  and  $f(-2x)$ . *Answer:*  $8$  and  $-6x - 1$
9. Graph the inequality  $3x + y \geq 4$ . *Answer:* 
10. State the domain and range of the relation  $\{(0, 0), (2, 3), (4, -5), (-2, -5)\}$ .  
Is this relation a function? *Answer:* Domain =  $\{-2, 0, 2, 4\}$ , Range =  $\{-5, 0, 3\}$ , Is a function
11. Subtract and simplify  $(3x^3 - 2x + 1) - (4x^2 + 2)$ . *Answer:*  $3x^3 - 4x^2 - 2x - 1$
12. Multiply and simplify  $(3x - 8)(x - 4)$ . *Answer:*  $3x^2 - 20x + 32$
13. Factor completely  $x^2 - 3x + 2$ . *Answer:*  $(x - 2)(x - 1)$
14. Factor completely  $xy - 2x - 4y + 8$ . *Answer:*  $(x - 4)(y - 2)$
15. Solve  $2x^2 - x - 6 = 0$ . *Answer:*  $x = -3/2$ ,  $x = 2$
16. Divide and simplify:  $\frac{2x^2 - 5x - 3}{x^2 - 2x - 3} \div \frac{2x^2 - x - 1}{2x + 2}$  *Answer:*  $\frac{2}{x-1}$
17. Combine and simplify:  $\frac{x}{x-5} + \frac{5}{5-x}$  *Answer:*  $1$
18. Simplify  $\frac{1 + \frac{1}{x}}{1 - \frac{1}{x}}$ . *Answer:*  $\frac{x+1}{x-1}$
19. Solve  $\frac{1}{6x} + \frac{2}{3x} = \frac{1}{4}$ . *Answer:*  $x = \frac{10}{3}$
20. Solve and graph the solution set of  $\frac{x}{x+4} \leq 0$ . *Answer:* 
21. Simplify  $\sqrt{8x^3y^5}$ . *Answer:*  $2xy^2\sqrt{2xy}$
22. Combine and Simplify  $\frac{x^{4/3}}{x^{1/2}x^{1/3}}$ . *Answer:*  $x^{1/2}$
23. Combine and simplify  $\sqrt{500} + \sqrt{80} - \sqrt{20}$ . *Answer:*  $12\sqrt{5}$
24. Add  $(-6 - i) + (2 - 3i)$ . *Answer:*  $-4 - 4i$
25. Multiply and simplify  $(6 - i)(2 + 3i)$ . *Answer:*  $15 - 16i$
26. Solve  $(x - 3)^2 = -4$ . *Answer:*  $x = 3 \pm 2i$
27. Solve  $x^2 + 12x - 4 = 0$  by completing the square. *Answer:*  $x = -6 \pm 2\sqrt{10}$
28. Solve  $x^2 - 2x - 4 = 0$  using the quadratic formula. *Answer:*  $x = 1 \pm \sqrt{5}$
29. Solve  $\sqrt{2x + 5} = x - 5$ . *Answer:*  $x = 10$
30. Solve  $3x - 4x^{\frac{1}{2}} + 1 = 0$ . *Answer:*  $x = \frac{1}{9}$ ,  $x = 1$