

College Algebra
Final Exam A (Fall)

Name _____ ID _____
Per. _____

1. Simplify: $8(x+1) + (x+1)$ [A] $8x+7$ [B] $8x+9$ [C] $9x+7$ [D] $9x+9$

Solve:

2. $15 = m + 7$ [A] 105 [B] 22 [C] 8 [D] 9

3. $49 = 7y$ [A] 56 [B] 7 [C] 6 [D] $\frac{1}{7}$

4. $-\frac{x}{3} = 9$ [A] -3 [B] -27 [C] 3 [D] 27

5. $8x + 7 = 39$ [A] 46 [B] 4 [C] 7 [D] 32

6. $-8x + 25 + 10x + 25 = -6$ [A] 28 [B] -28 [C] -22 [D] 22

Solve:

7. $\frac{6}{17}y - 48 = 0$ [A] 4896 [B] -136 [C] 136 [D] -4896

8. $4x - 2 = x + 6$ [A] $\frac{3}{8}$ [B] $\frac{8}{3}$ [C] $\frac{1}{2}$ [D] $-\frac{8}{3}$

9. Solve the equation. Round your result to two decimal places. $-4x + 2.8 = 3.3$
[A] -0.13 [B] 4.50 [C] -0.38 [D] -1.53

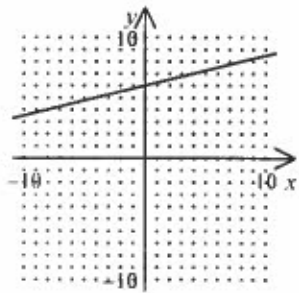
10. Find the slope of the line passing through the points $A(1, 2)$ and $B(-7, -8)$.
[A] $\frac{5}{4}$ [B] 1 [C] $-\frac{4}{5}$ [D] $\frac{4}{5}$

11. Find an equation, in slope-intercept form, that passes through point $(4, 7)$ with slope -2 .
[A] $y = -2x + 2$ [B] $y = 2x + 2$ [C] $y = 2x + 15$ [D] $y = -2x + 15$

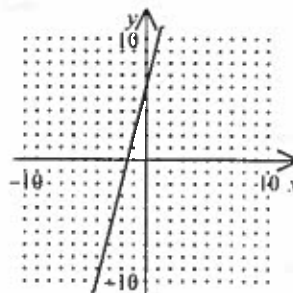
12. Find an equation of the line containing the points $(7, -3)$ and $(15, -4)$.
[A] $-x + 8y = -31$ [B] $2x + 16y = 106$
[C] $-8x - 2y = -53$ [D] $x + 8y = -17$

13. Graph the line.
 $y = 4x + 6$

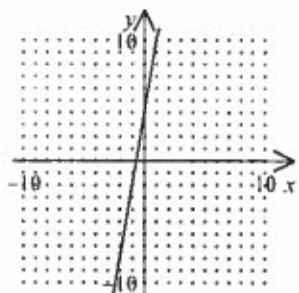
[A]



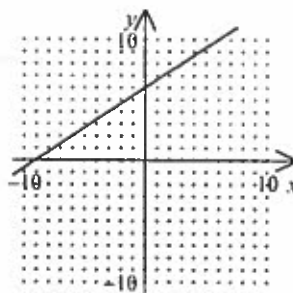
[B]



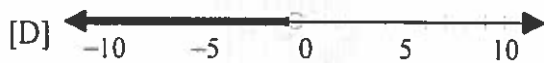
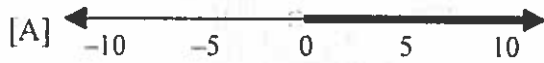
[C]



[D]

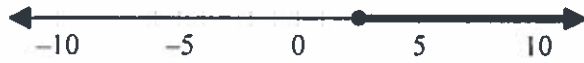


14. Graph: $4x - 1 \geq 2(x - 1)$



15. Solve and graph the inequality: $5x - 2 < 3(x + 1)$

[A]



[B]



[C]

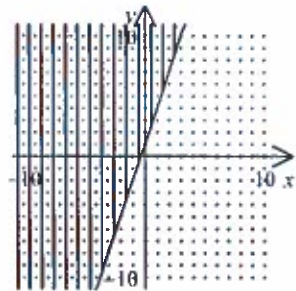


[D]

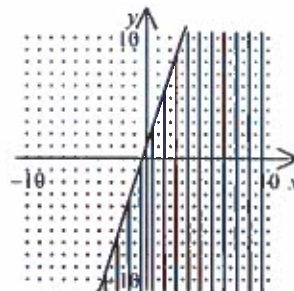


16. Graph: $-y \geq 3x - 1$

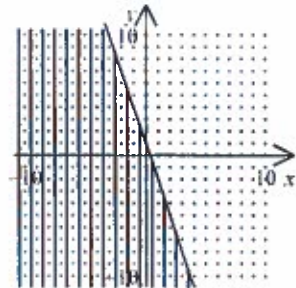
[A]



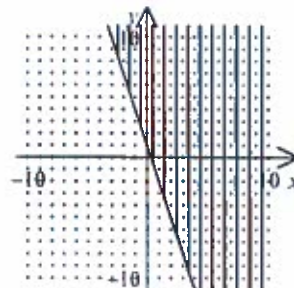
[B]



[C]



[D]



17. Simplify the product: $(2jk^2)^4(jk)^2$

[A] $2j^6k^{10}$

[B] $16j^6k^{10}$

[C] $16j^6k^4$

[D] $2j^5k^{10}$

18. Simplify: $a^{-8} \times a^6$

[A] a^{48}

[B] $\frac{1}{a^2}$

[C] $\frac{1}{a^{48}}$

[D] a^2

19. Multiply: $2^2 \times 5 \times 6^0$

[A] 20

[B] 0

[C] 120

[D] 160

20. Simplify: $\frac{-21x^6y}{-7xy^2}$

[A] $\frac{2x^7}{y^3}$

[B] $-\frac{3x^5}{y}$

[C] $\frac{3x^5}{y}$

[D] $-\frac{2x^7}{y^3}$

21. Add: $(5x^3 - 7x^6 - 3) + (5x^6 - 7 + 3x^3)$

[A] $10x^6 - 14x^3 - 10$

[B] $10x^6 - 14x^3$

[C] $-2x^6 + 8x^3 - 10$

[D] $-2x^6 + 8x^3 + 4$

22. Subtract: $(-8x^3 + 3x^2 + 6) - (-7x^3 + 5x^2 + 3)$

[A] $-15x^3 + 8x^2 + 3$

[B] $-x^3 - 2x^2 + 3$

[C] $-15x^3 + 8x^2 + 9$

[D] $-x^6 - 2x^4 + 3$

Multiply:

23. $(9a+4)(9a-4)$

- [A] $81a^2+36a-16$ [B] $81a^2-16$ [C] $81a^2-72a-16$ [D] $81a^2+72a-16$

24. $(x+1)(x^2+x+5)$

- [A] x^3+2x^2+6x+5 [B] x^3+x^2+5 [C] x^3+2x^2+x+5 [D] x^2+5

25. Factor: $x^2-13x+42$

- [A] $(x-6)(x+7)$ [B] $(x+6)(x-7)$ [C] $(x+6)(x+7)$ [D] $(x-6)(x-7)$

26. Factor the expression: $25y^2-16$

- [A] $(5y+4)(5y+4)$ [B] $(5y+4)(5y-4)$
[C] $(25y+1)(y-16)$ [D] $(5y-4)(5y-4)$

27. Solve: $x^2-2x=0$ [A] 2, -2 [B] 0, 2 [C] 0, -2 [D] 2, -3

28. What are the solutions to the equation?

$$x^2 = x + 30$$

[A] $x = 5$ or $x = -6$

[B] $x = 30$ or $x = -1$

[C] $x = 6$ or $x = -5$

[D] $x = 1$ or $x = -30$

29. What are the solutions to the equation?

$$x^2 + 4x - 21 = 0$$

[A] $x = 1$ or $x = -21$

[B] $x = 21$ or $x = -1$

[C] $x = 7$ or $x = -3$

[D] $x = 3$ or $x = -7$

30. Simplify: $\frac{2x - 2x^2}{12x - 12}$ [A] $\frac{1-x}{12}$ [B] $\frac{x^2}{12}$ [C] $\frac{x-x^2}{6x-6}$ [D] $-\frac{x}{6}$

Multiply:

31. $\frac{3y^2}{4} \cdot \frac{20x}{15y}$ [A] $\frac{5xy^2}{9}$ [B] xy [C] $\frac{5x}{3}$ [D] $\frac{20xy}{3}$

32. $x - 5 \cdot \frac{x-4}{x^2-25}$ [A] $\frac{x-4}{x-5}$ [B] $\frac{x+4}{x+5}$ [C] $\frac{x-4}{(x-5)(x^2-25)}$ [D] $\frac{x-4}{x+5}$

33. Divide: $\frac{x+8}{x-8} \div \frac{x^2-64}{8-x}$ [A] $\frac{1}{x-8}$ [B] $\frac{1}{10-x}$ [C] $\frac{x+8}{x-8}$ [D] $\frac{1}{8-x}$

34. Add: $\frac{5}{x+9} + \frac{6}{x-9}$ [A] $\frac{11x+9}{11}$ [B] $\frac{11x+9}{x^2-81}$ [C] $\frac{11}{x+9}$ [D] $\frac{11}{x^2-81}$

35. Subtract: $\frac{1}{x+2} - \frac{4}{x-2}$
[A] $\frac{-3x-10}{x^2-4}$ [B] $-\frac{3}{x-2}$ [C] $-\frac{3}{x^2-4}$ [D] $\frac{-3x-10}{x+2}$

36. Divide: $\frac{x^2-4x-5}{x}$ [A] $x^2-4x-\frac{5}{x}$ [B] $x-4-\frac{5}{x}$ [C] $x-9$ [D] $x-4$

College Algebra

Final exam review (A)

$$\textcircled{1} \quad 8(x+1) + (x+1)$$

$$= 8x + 8 + x + 1 = 9x + 9$$

$$\textcircled{2} \quad 15 = m + 7$$

$$8 = m$$

$$\textcircled{3} \quad 49 = 7y$$

$$7 = y$$

$$\textcircled{4} \quad -\frac{x}{3} = 9$$

$$-x = 27$$

$$x = -27$$

$$\textcircled{5} \quad 8x + 7 = 39$$

$$8x = 32$$

$$x = 4$$

$$\textcircled{6} \quad -8x + 25 + 10x + 25 = -6$$

$$2x + 50 = -6$$

$$2x = -56$$

$$x = -28$$

$$\textcircled{7} \quad \frac{6}{17}y - 48 = 0$$

$$6y - 816 = 0$$

$$6y = 816$$

$$y = 136$$

$$\textcircled{8} \quad 4x - 2 = x + 6$$

$$3x = 8$$

$$x = \frac{8}{3}$$

$$\textcircled{9} \quad -4x + 2.8 = 3.3$$

$$-4x = 6.1$$

$$x = 1.525 \approx 1.53$$

$$\textcircled{10} \quad m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-8 - 2}{-7 - 1} = \frac{-10}{-8} = \frac{5}{4}$$

$$\textcircled{11} \quad y = mx + b$$

$$(7) = (-2)(4) + b$$

$$7 = -8 + b$$

$$15 = b$$

$$y = -2x + 15$$

⑫

$$m = \frac{-4 - (-3)}{15 - 7} = \frac{-1}{8}$$

$$y = mx + b$$

$$(-3) = \left(\frac{-1}{8}\right)(7) + b$$

$$-3 = \frac{-7}{8} + b$$

$$-24 = -7 + 8b$$

$$-17 = 8b$$

$$\frac{-17}{8} = b$$

$$y = \frac{-1}{8}x - \frac{17}{8}$$

⇓

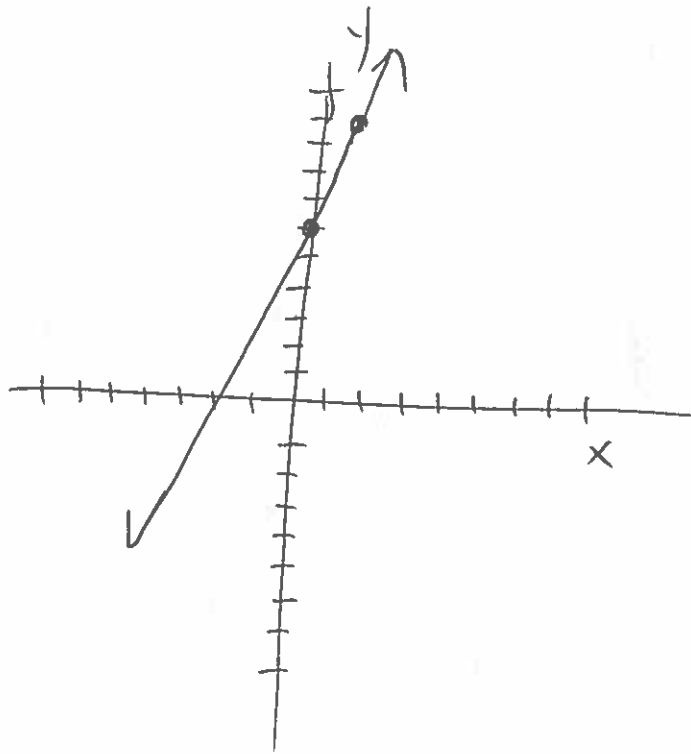
$$8y = -x - 17$$

$$x + 8y = -17$$

⑬ $y = 4x + 6$

$$m = \frac{4}{1}$$

$$y = 6$$

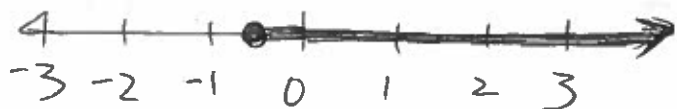


⑭ $4x - 1 \geq 2(x - 1)$

$$4x - 1 \geq 2x - 2$$

$$2x \geq -1$$

$$x \geq \frac{-1}{2}$$



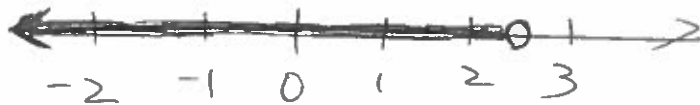
$$\textcircled{15} \quad 5x - 2 < 3(x + 1)$$

$$5x - 2 < 3x + 3$$

$$2x - 2 < 3$$

$$2x < 5$$

$$x < \frac{5}{2}$$

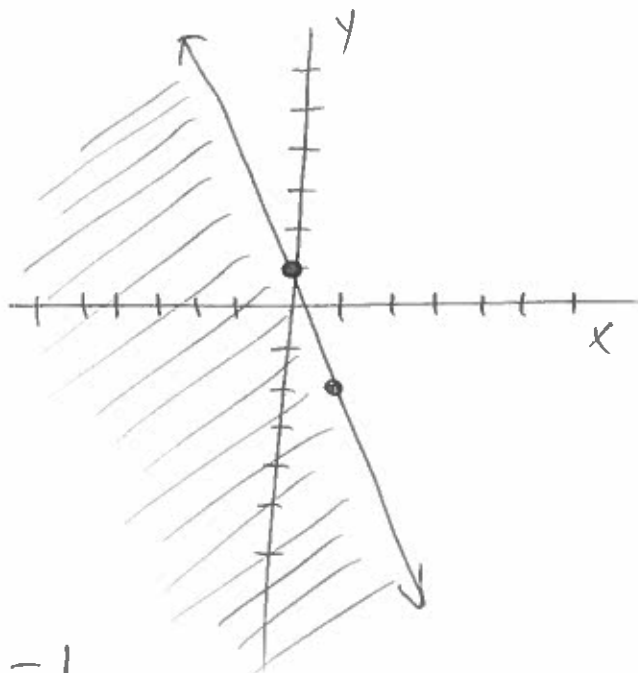


$$\textcircled{16} \quad -y \geq 3x - 1$$

$$y \leq -3x + 1$$

$$m = \frac{-3}{1}$$

$$y = 1$$



shading. $-(0) \geq 3(0) - 1$
 $0 \geq -1$
true

$$\textcircled{17} \quad (2jk^2)^4 (jk)^2 = (2^4 j^4 k^8)(j^2 k^2) = 16j^6 k^{10}$$

$$\textcircled{18} \quad a^{-8} \times a^6 = a^{-2} = \frac{1}{a^2}$$

$$\textcircled{19} \quad 2^2 \times 5 \times 6^0 = 4 \times 5 \times 1 = 20$$

$$\textcircled{20} \quad \frac{-21x^6y}{-7xy^2} = \frac{3x^5}{y}$$

$$\textcircled{21} \quad (5x^3 - 7x^6 - 3) + (5x^6 - 7 + 3x^3) \\ = -2x^6 + 8x^3 - 10$$

$$\textcircled{22} \quad (-8x^3 + 3x^2 + 6) - (-7x^3 + 5x^2 + 3) \\ = -8x^3 + 3x^2 + 6 + 7x^3 - 5x^2 - 3 \\ = -x^3 - 2x^2 + 3$$

$$\textcircled{23} \quad (9a+4)(9a-4) \quad (a+b)(a-b) \\ = (9a)^2 - (4)^2 \quad = a^2 - b^2 \\ = 81a^2 - 16$$

$$\textcircled{24} \quad (x+1)(x^2+x+5) \\ = x^3 + x^2 + 5x + x^2 + x + 5 \\ = x^3 + 2x^2 + 6x + 5$$

$$\textcircled{25} \quad x^2 - 13x + 42 \\ = (x-6)(x-7)$$

$$\begin{array}{r} 42 \\ -6 \quad -7 \\ \hline -13 \end{array}$$

$$\begin{aligned} \textcircled{26} \quad & 25y^2 - 16 \\ & = (5y)^2 - (4)^2 \\ & = (5y + 4)(5y - 4) \end{aligned}$$

$$\begin{aligned} & a^2 - b^2 \\ & = (a + b)(a - b) \end{aligned}$$

$$\begin{aligned} \textcircled{27} \quad & x^2 - 2x = 0 \\ & x(x - 2) = 0 \\ & x = 0, \quad x = 2 \end{aligned}$$

$$\begin{aligned} \textcircled{28} \quad & x^2 = x + 30 \\ & x^2 - x - 30 = 0 \\ & (x - 6)(x + 5) = 0 \\ & x = 6, \quad x = -5 \end{aligned}$$

$$\begin{aligned} \textcircled{29} \quad & x^2 + 4x - 21 = 0 \\ & (x + 7)(x - 3) = 0 \\ & x = -7, \quad x = 3 \end{aligned}$$

$$\textcircled{30} \quad \frac{2x - 2x^2}{12x - 12} = \frac{2x(1-x)}{12(x-1)} = \frac{-2x(x-1)}{12(x-1)} = \frac{-x}{6}$$

$$\begin{aligned} \textcircled{31} \quad & \frac{3y^2}{4} \cdot \frac{20x}{15y} \\ & = \frac{\cancel{3}y^2}{\cancel{4}} \cdot \frac{\cancel{20}x}{\cancel{15}y} = \frac{y^2x}{y} = xy \end{aligned}$$

$$\textcircled{32} \quad x-5 \cdot \frac{x-4}{x^2-25} = \frac{x-5}{1} \cdot \frac{x-4}{(x+5)(x-5)} = \frac{x-4}{x+5}$$

$$\begin{aligned} \textcircled{33} \quad & \frac{x+8}{x-8} \cdot \frac{x^2-64}{8-x} \\ & = \frac{x+8}{x-8} \cdot \frac{8-x}{x^2-64} \\ & = \frac{x+8}{x-8} \cdot \frac{-(x-8)}{(x+8)(x-8)} = \frac{-1}{x-8} = \frac{1}{8-x} \end{aligned}$$

$$\begin{aligned} \textcircled{34} \quad & \frac{5}{x+9} + \frac{6}{x-9} \\ & = \frac{5(x-9)}{(x+9)(x-9)} + \frac{6(x+9)}{(x+9)(x-9)} \\ & = \frac{5x-45+6x+54}{(x+9)(x-9)} = \frac{11x+9}{x^2-81} \end{aligned}$$

35

$$\frac{1}{x+2} - \frac{4}{x-2}$$

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

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

$$= \frac{-3x-10}{(x+2)(x-2)} = \frac{-3x-10}{x^2-4}$$

36

$$\frac{x^2-4x-5}{x}$$

$$= \frac{x^2}{x} - \frac{4x}{x} - \frac{5}{x}$$

$$= x - 4 - \frac{5}{x}$$