

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

Date: \_\_\_\_\_

### Placement Test Review Problems

\_\_\_\_\_ 1. List the integer elements of  $B = \{7, \sqrt{7}, -20, 0, -\frac{5}{8}, \frac{8}{5}, 1.5, \sqrt{16}\}$

- (a) 7, 0      (b) 7, -20, 0      (c) 7, -20, 0,  $\sqrt{16}$       (d) 7, 0,  $\sqrt{16}$

\_\_\_\_\_ 2. Simplify the expression.  $5 - 2[-2^2 - (3 \cdot 2^3 - 12 \div \sqrt{9})] =$

- (a) -48      (b) 53      (c) 37      (d) -72

\_\_\_\_\_ 3. Simplify; use positive exponents in answer.  $\left(\frac{3p^4v^{-2}}{s^4}\right)^{-2} =$

- (a)  $\frac{3p^8v^4}{s^6}$       (b)  $\frac{-9s^8v^4}{p^8}$       (c)  $\frac{3p^8v^4}{s^8}$       (d)  $\frac{s^8v^4}{9p^8}$

\_\_\_\_\_ 4. Evaluate and write the answer in scientific notation.  $\frac{4.6 \times 10^5}{2.3 \times 10^{-2}} =$

- (a)  $2 \times 10^{-7}$       (b)  $2 \times 10^7$       (c)  $2 \times 10^3$       (d)  $2 \times 10^{-3}$

\_\_\_\_\_ 5. Solve for y.  $\frac{3}{8}y - (y - \frac{4}{9}) = \frac{1}{72}(y - 7)$

- (a)  $-\frac{39}{98}$       (b)  $\frac{39}{44}$       (c)  $\frac{39}{46}$       (d)  $-\frac{25}{46}$

\_\_\_\_\_ 6. Solve for C.  $F = \frac{2}{5}C + 32$

- (a)  $C = \frac{5}{9}(F - 32)$       (b)  $C = \frac{(F - 32)}{9}$   
(c)  $C = \frac{5}{(F - 32)}$       (d)  $C = \frac{5}{9}(F - 32)$

\_\_\_\_\_ 7. Solve.  $-42x - 42 \leq -6(6x + 3)$

- (a)  $x \leq -4$       (b)  $x > -4$       (c)  $x \geq -4$       (d)  $x < -4$

### Placement Test Review Problems (cont.)

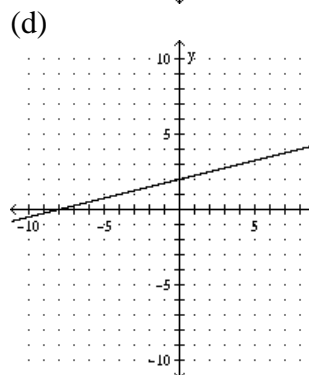
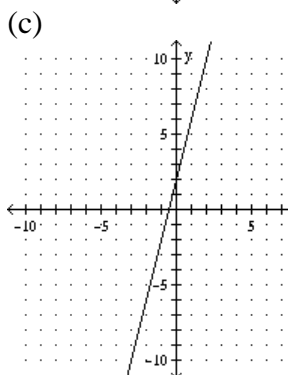
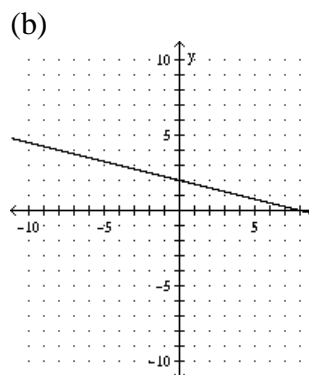
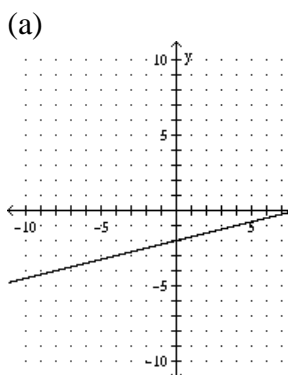
\_\_\_\_\_ 8. Solve.  $|8m - 3| + 1 = 14$

- (a) 2                      (b)  $2, -\frac{5}{4}$                       (c)  $2, -2$                       (d)  $2, -\frac{3}{2}$

\_\_\_\_\_ 9. Solve.  $|3y - 2| - 7 > -4$

- (a)  $y > \frac{5}{3}$  or  $y < -\frac{1}{3}$                       (b)  $y > \frac{5}{3}$   
 (c)  $-\frac{1}{3} < y < \frac{5}{3}$                       (d)  $y > \frac{5}{3}$  or  $y < \frac{13}{3}$

\_\_\_\_\_ 10. Graph.  $y = \frac{1}{4}x + 2$



\_\_\_\_\_ 11. Find the slope of a line that is perpendicular to  $5x + 2y = 8$ .

- (a) 4                      (b)  $-\frac{5}{2}$                       (c)  $\frac{5}{2}$                       (d)  $\frac{2}{5}$

\_\_\_\_\_ 12. Solve the system.  $\begin{cases} 3x - 5y = -12 \\ 6x + 8y = -24 \end{cases}$  The solution for  $x$  is

- (a) -4                      (b) 0                      (c) 4                      (d) 2

### Placement Test Review Problems (cont.)

\_\_\_\_\_ 13. Simplify.  $(-6x^5 + 9x^7 - 1 - 9x^6) - (-4 + 6x^6 + 3x^7 - 9x^5) =$

(a)  $12x^7 - 3x^6 - 15x^5 - 5$

(b)  $6x^7 - 15x^6 + 3x^5 + 3$

(c)  $6x^7 - 3x^6 - 15x^5 - 5$

(d)  $12x^7 - 3x^6 - 15x^5 + 3$

\_\_\_\_\_ 14. Multiply.  $(9x - 5y)^2 =$

(a)  $9x^2 - 90xy + 25y^2$

(b)  $9x^2 + 25y^2$

(c)  $81x^2 + 25y^2$

(d)  $81x^2 - 90xy + 25y^2$

\_\_\_\_\_ 15. Multiply.  $(x + \frac{1}{3})(x - \frac{1}{3}) =$

(a)  $x^2 - 9$

(b)  $x^2 - \frac{1}{9}$

(c)  $x^2 + 9x - 9$

(d)  $9x^2 - 1$

\_\_\_\_\_ 16. Factor completely.  $10a^3 - 25a^2b - 12ab^2 + 30b^3 =$

(a)  $(5a^2 + 6b^2)(2a + 5b)$

(b)  $(5a^2 - 6b)(2a - 5b)$

(c)  $(10a^2 - 6b^2)(a - 5b)$

(d)  $(5a^2 - 6b^2)(2a - 5b)$

\_\_\_\_\_ 17. Factor completely.  $t^3 + 64 =$

(a)  $(t + 4)(t^2 - 4t + 16)$

(b)  $(t - 64)(t^2 - 1)$

(c)  $(t + 4)(t^2 + 16)$

(d)  $(t - 4)(t^2 + 4t + 16)$

\_\_\_\_\_ 18. Solve.  $4k^2 - 23k - 6 = 0$

(a)  $-\frac{1}{4}, 6$

(b)  $-\frac{1}{4}, 4$

(c)  $-4, 6$

(d)  $\frac{1}{23}, -\frac{1}{4}$

\_\_\_\_\_ 19. A certain rectangle's length is 9 feet longer than its width. If the area of the rectangle is 90 square feet, find its dimensions.

(a) 5 feet by 14 feet

(b) 6 feet by 15 feet

(c) 7 feet by 16 feet

(d) 5 feet by 16 feet

### Placement Test Review Problems (cont.)

\_\_\_\_\_ 20. Divide and simplify.  $\frac{z^2 + 10z + 24}{z^2 + 11z + 28} \div \frac{z^2 + 6z}{z^2 - z - 56} =$

(a)  $\frac{z-8}{z}$       (b)  $\frac{z-8}{z^2+7z}$       (c)  $z-8$       (d)  $\frac{z}{z^2+11z+28}$

\_\_\_\_\_ 21. Add.  $\frac{3}{y^2-3y+2} + \frac{5}{y^2-1} =$

(a)  $\frac{7y-8}{(y-1)(y+1)(y-2)}$       (b)  $\frac{8y-7}{(y-1)(y+1)(y-2)}$   
(c)  $\frac{8}{(y-1)(y+1)(y-2)}$       (d)  $\frac{8y-7}{(y-1)(y-2)}$

\_\_\_\_\_ 22. Simplify.  $\frac{4 + \frac{2}{x}}{\frac{x}{3} + \frac{1}{6}} =$

(a)  $\frac{x}{12}$       (b) 12      (c) 1      (d)  $\frac{12}{x}$

\_\_\_\_\_ 23. Solve.  $\frac{8}{x+5} - \frac{3}{x-5} = \frac{15}{x^2-25}$

(a) 70      (b) -14      (c) 8      (d) 14

\_\_\_\_\_ 24. Simplify.  $\frac{(2x^{1/2})^3}{x^{-1/4}} =$

(a)  $6x^{7/4}$       (b)  $8x^{3/8}$       (c)  $8x^{5/4}$       (d)  $8x^{7/4}$

\_\_\_\_\_ 25. Simplify.  $\sqrt[3]{-64a^{14}b^{13}} =$

(a)  $4ab\sqrt[3]{a^5b^5}$       (b)  $4\sqrt[3]{a^{13}b^{14}}$   
(c)  $-4a^4b^4\sqrt[3]{a^2b}$       (d)  $-4a^4b^4\sqrt{a^2b}$

### Placement Test Review Problems (cont.)

\_\_\_\_\_26. Rationalize the denominator.  $\frac{1+\sqrt{6}}{1-\sqrt{6}} =$

- (a)  $\frac{-5-2\sqrt{6}}{7}$       (b)  $\frac{7-2\sqrt{6}}{-5}$       (c) -1      (d)  $\frac{7+2\sqrt{6}}{-5}$

\_\_\_\_\_27. Solve.  $\sqrt{3x+1} = x-3$

- (a) 1,8      (b) 8      (c) -1,-8      (d) 1

\_\_\_\_\_28. Simplify.  $4-\sqrt{-100}$

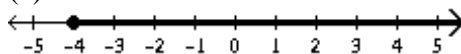
- (a)  $4+10$       (b)  $4-10i$       (c)  $4+10i$       (d)  $4-100i$

\_\_\_\_\_29. Solve.  $5+3x(x-2) = 4.$

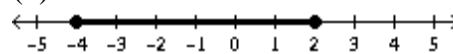
- (a)  $\frac{3\pm\sqrt{6}}{3}$       (b)  $\pm\sqrt{24}$       (c)  $1\pm 2\sqrt{6}$       (d)  $\frac{3\pm 2\sqrt{3}}{3}$

\_\_\_\_\_30. Solve the inequality  $x^2 + 2x \geq 8$  and graph the solution.

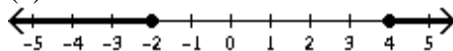
(a)  $x \geq -4$  or  $x \geq 2$



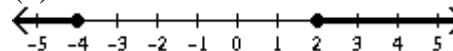
(b)  $-4 \leq x \leq 2$



(c)  $x \geq 4$  or  $x \leq -2$



(d)  $x \leq -4$  or  $x \geq 2$



\_\_\_\_\_31. The equation  $0.08x = 48$  is equivalent to :

- (a)  $8x = 480$       (b)  $8x = 0.48$       (c)  $0.01x = 6$       (d)  $x = 47.02$

\_\_\_\_\_32. Simplify.  $7-2[3x-2(x-5y)-7y]$

- (a)  $7-2x+24y$       (b)  $7-2x-6y$       (c)  $7-2x+34y$       (d)  $5x+15y$

\_\_\_\_\_33. Simplify.  $(4p^4y^3)(-2p^2y)$

- (a)  $\frac{p^8y^3}{8}$       (b)  $-8p^8y^3$       (c)  $-8p^6y^3$       (d)  $-8p^6y^4$

### Placement Test Review Problems (cont.)

\_\_\_\_\_ 34. The x intercept of  $5x + 3y = 15$  is.

- (a) 0            (b) 5            (c) 3            (d)  $x = 47.02$

\_\_\_\_\_ 35. If  $f(x) = 3x^2 + 4$ ,  $f(x-h) =$

- (a)  $3(x-h)^2 + 4$    (b)  $3x^2 + 4 - h$    (c)  $(3x^2 + 4) - (3h^2 + 4)$    (d)  $3x^2 - 2xh + h^2 + 4$

\_\_\_\_\_ 36. If  $\log_b a = c$ , then

- (a)  $b^c = a$         (b)  $b^a = c$         (c)  $a^c = b$         (d)  $c^b = a$

\_\_\_\_\_ 37. If  $8^x = 5$ , then

- (a)  $x = \log_8 5$    (b)  $x = \log_5 8$    (c)  $x = \log \frac{5}{8}$    (d)  $x = \log_8 \frac{8}{5}$

\_\_\_\_\_ 38.  $\frac{4}{3a} + \frac{3}{2b} =$

- (a)  $\frac{3}{a+b}$         (b)  $\frac{8b+9a}{6ab}$         (c)  $\frac{7}{3a+2b}$         (d)  $\frac{7}{6ab}$

\_\_\_\_\_ 39.  $5x^0 =$

- (a) 0            (b) 5            (c) 1            (d) undefined

\_\_\_\_\_ 40.  $\frac{6x^2 + 2x}{2x} =$

- (a)  $3x$             (b)  $3x+1$         (c)  $6x^2$             (d)  $5x$

\_\_\_\_\_ 41.  $\frac{10}{\sqrt{15}} =$

- (a)  $\frac{20}{3}$             (b)  $\frac{2}{\sqrt{3}}$             (c)  $\frac{2\sqrt{15}}{3}$             (d) 2.6

### Placement Test Review Problems (cont.)

\_\_\_\_\_ 42. Solve.  $10x^2 = 5x$

- (a)  $\{\frac{1}{2}\}$       (b)  $\{\frac{1}{2}, 0\}$       (c)  $\{2\}$       (d)  $\{-\frac{1}{2}, 0\}$

\_\_\_\_\_ 43.  $\left(\frac{2}{3}\right)^{-2} - \left(\frac{3}{4}\right)^{-1} =$

- (a)  $\frac{11}{12}$       (b)  $-\frac{7}{12}$       (c)  $-\frac{43}{36}$       (d)  $-\frac{8}{9}$

\_\_\_\_\_ 44.  $16^{-\frac{3}{4}} =$

- (a)  $-12$       (b)  $16^{\frac{3}{4}}$       (c)  $\frac{1}{8}$       (d)  $-8$

\_\_\_\_\_ 45.  $(2 - 3\sqrt{x})^2 =$

- (a)  $4 - 9x$       (b)  $4 + 9x$       (c)  $4 - 6\sqrt{x} + x$       (d)  $4 - 12\sqrt{x} + 9x$

\_\_\_\_\_ 46.  $\frac{2}{5}ab - 3a^2 + \frac{3}{4}ab - 5a^2 =$

- (a)  $\frac{5}{9}ab - 8a^2$       (b)  $\frac{23}{20}ab - 8a^2$       (c)  $\frac{17}{10}ab - 8a^2$       (d)  $23ab - 160a^2$

\_\_\_\_\_ 47. Solve for p.  $A = \frac{12M}{p + 3pr}$

- (a)  $\frac{12M - 3pAr}{A}$       (b)  $\frac{4M}{Ar}$       (c)  $\frac{4M}{A + Ar}$       (d)  $\frac{12M}{A + 3Ar}$

\_\_\_\_\_ 48.  $-\sqrt{12} + 2\sqrt{27} - \sqrt{75} =$

- (a)  $-\sqrt{3}$       (b)  $\sqrt{3}$       (c)  $-11\sqrt{3}$       (d) can not be combined

### Placement Test Review Problems (cont.)

\_\_\_\_\_49. Solve the system:  $\begin{cases} 10x + 3y = 8 \\ y = -2x + 2 \end{cases}$  The solution for  $y$  is:

- (a)  $\frac{1}{2}$       (b)  $-1$       (c)  $1$       (d)  $-\frac{1}{2}$

\_\_\_\_\_50. The smallest angle in a triangle is one-third of the largest angle. The third angle is  $20^\circ$  more than the smallest. Find the measure of the smallest angle.

- (a)  $96^\circ$       (b)  $32^\circ$       (c)  $52^\circ$       (d)  $16^\circ$

\_\_\_\_\_51. Simplify.  $8 - (-6) \left[ \frac{2(-3) - 5(4)}{-8(6) - 4} \right] =$

- (a)  $11$       (b)  $7$       (c)  $-7$       (d)  $0$

\_\_\_\_\_52. Simplify.  $\frac{2x^{-5}}{x^{-6}} =$

- (a)  $32x$       (b)  $x/32$       (c)  $2x$       (d)  $2/x$

\_\_\_\_\_53. Expand and simplify.  $(x-2)^3$

- (a)  $x^3 - 8$       (b)  $x^3 - 6x^2 + 12x - 8$       (c)  $x^3 + 6x^2 - 12x - 8$       (d)  $x^3 - x^2 + x - 8$

\_\_\_\_\_54. If  $g(x) = x^2 - 6$ , then  $g(c) + g(2) =$

- (a)  $c^2 + 4c - 2$       (b)  $c^2 - 8$       (c)  $c^2 + 4c + 4$       (d)  $c^2 + 4$

\_\_\_\_\_55. Rationalize the denominator.  $\frac{1}{\sqrt[3]{x^2}} =$

- (a)  $\frac{\sqrt[3]{x^2}}{x}$       (b)  $\frac{\sqrt[3]{x}}{x}$       (c)  $\frac{1}{x}$       (d)  $\frac{\sqrt{x}}{x}$

### Placement Test Review Problems (cont.)

\_\_\_\_\_56. Simplify.  $\frac{a^{-1} + b^{-1}}{a^{-1}}$

- (a)  $1 + \frac{1}{b}$       (b)  $\frac{a}{a+b}$       (c)  $\frac{1}{b}$       (d)  $\frac{b+a}{b}$

\_\_\_\_\_57. Solve :  $3x+1 > -2$  AND  $-4x < -8$

- (a)  $x > 2$       (b)  $x > -1$       (c)  $-1 < x < 2$       (d) no solution

\_\_\_\_\_58. Find the equation of line through points (2,3) and (-4,5).

- (a)  $y - 5 = -\frac{1}{3}(x - 2)$       (b)  $y - 5 = -\frac{1}{3}(x + 4)$   
(c)  $y - 5 = 3(x + 4)$       (d)  $y = -\frac{1}{3}x + 5$

\_\_\_\_\_59. If set  $A = \{1, 3, 6, 9, 12\}$  and set  $B = \{1, 2, 4, 6, 8, 12\}$ , find  $A \cap B$  :

- (a)  $\{6, 12\}$       (b)  $\{1, 12\}$       (c)  $\{1, 6, 12\}$       (d)  $\{1, 2, 3, 4, 5, 6, 8, 9, 12\}$

\_\_\_\_\_60. If  $x = 3$  and  $y = -2$ , evaluate the expression  $-3(x - y)^2 + 1$ .

- (a)  $-74$       (b)  $-75$       (c)  $-38$       (d)  $-2$