

MSLC – Math 1075
Exam 1 Review

Disclaimer: This should NOT be used as your only guide for what to study.

1. Factor completely.
 - a. $x^3y^2 + xy^2 - 5xy^3$
 - b. $3m(9n-2) + 8(9n-2)$
 - c. $-27x^3 + 18x^2 - 3x$
 - d. $15x^2 + 10xy - 6x - 4y$
 - e. $18xy - 4y^2 + 36x - 8y$
 - f. $5z^2 + 12z + 7$
 - g. $mn - 9m - n + 9$
 - h. $63c^2 - 28d^2$
 - i. $8m^3 + 125p^3$
 - j. $9v^2 + 14v - 8$
 - k. $x^2 + 2xy + y^2 - 16z^2$

2. Solve the absolute value equation algebraically.
 - a. $|8x - 5| = 13$
 - b. $|4x + 2| = |5x - 1|$
 - c. $|7 - 2x| = 11$

3. Solve the following inequalities algebraically. Give your answers in interval notation.
 - a. $5(1 - 2x) \leq 9(x - 3)$
 - b. $-7 < 5x + 8 \leq 28$
 - c. $|4x + 1| < 17$
 - d. $|2x - 1| \geq 5$
 - e. $-21 \leq 3(x + 2) < 18$
 - f. $|7 + 2x| \leq 11$
 - g. $|8x - 5| > 13$

4. Given set $A = [-5, 1]$ and set $B = (-1, 8]$ determine:
 - a. $A \cup B$
 - b. $A \cap B$

5. Graph the solution sets to the following system of linear inequalities.

a. $x + 2y \leq 2$
 $2x - y > 4$

b. $x \geq -1$
 $y \geq 3$

6. Solve by factoring:

a. $x^2 + 10x = -21$

b. $\frac{x^2}{18} + \frac{x}{6} - 1 = 0$

c. $(x + 6)(x - 2) = 9$

d. $5x^2 = 3x + 2$

7. Translate the following sentences into mathematical inequalities and then solve those inequalities algebraically. Give your answer in interval notation.

a. Six times the quantity w minus eleven is at least ninety-six more than five times w .

b. Twice the sum of y and fifteen never exceeds the quotient of y and 3.

8. The minimum charge for a taxi ride is \$3.50, plus \$0.25 per 0.1 mile. How many miles can you travel if you have at most \$30.25 to spend on taxi fare?

Answers

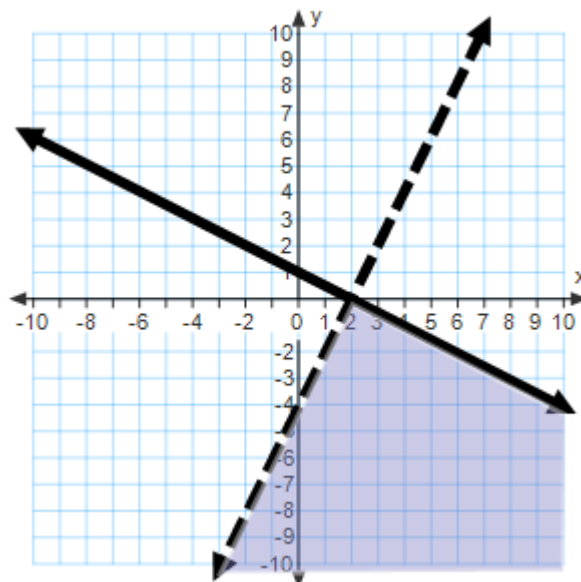
- $xy^2(x^2+1-5y)$
 - $(9n-2)(3m+8)$
 - $-3x(3x-1)^2$
 - $(3x+2y)(5x-2)$
 - $2(y+2)(9x-2y)$
 - $(5z+7)(z+1)$
 - $(n-9)(m-1)$
 - $7(3c+2d)(3c-2d)$
 - $(2m+5p)(4m^2-10mp+25p^2)$
 - $(9v-4)(v+2)$
 - $(x+y+4z)(x+y-4z)$

- $x=-1$ or $x=\frac{9}{4}$
 - $x=-\frac{1}{9}$ or $x=3$
 - $x=-2$ or $x=9$

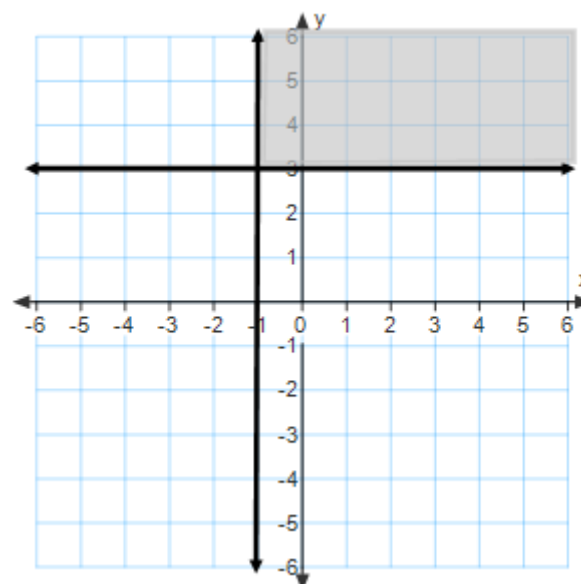
- $\left[\frac{32}{19}, \infty\right)$
 - $(-3, 4]$
 - $\left(-\frac{9}{2}, 4\right)$
 - $(-\infty, -2] \cup [3, \infty)$
 - $[-9, 4)$
 - $[-9, 2]$
 - $(-\infty, -1) \cup \left(\frac{9}{4}, \infty\right)$

- $[-5, 8]$
 - $(-1, 1]$

5. a.



b.



- $x=-7$ or $x=-3$
 - $x=-6$ or $x=3$
 - $x=-7$ or $x=3$
 - $x=-\frac{2}{5}$ or $x=1$

- $6(w-11) \geq 5x+96; [162, \infty)$
 - $2(y+15) \leq \frac{y}{3}; (-\infty, -18]$

8. 10.7 miles