

Show all your work to be assured full credit.

1. Answer true or false and justify your answer. ( 2 pts each)

a. If  $-5x < 8$ , then  $\frac{-5x}{-5} < \frac{8}{-5}$

b. If  $|x| < 5$ , then  $-5 < x < 5$

2. Solve the following equations for the appropriate variables. If the equation has extraneous solutions then so state. (5 pts each)

a.  $ax + bx = c$  solve for  $b$ .

Answer: \_\_\_\_\_

b.  $|2x + 3| = 5$ , solve for  $x$ .

Answer: \_\_\_\_\_

c.  $|x + 1| = |2x - 1|$ , solve for  $x$ .

Answer: \_\_\_\_\_

d.  $4u + 7(2 - u) = 3(u - 1) + 9$ , solve for  $u$ .

Answer: \_\_\_\_\_

e.  $\frac{1}{2}x - \frac{3}{5} = \frac{4}{5}(x - 1)$ , solve for  $x$ .

Answer: \_\_\_\_\_

f.  $\frac{2x}{x^2 - 2x - 3} - \frac{1}{x - 3} = \frac{3}{x + 1}$

Answer: \_\_\_\_\_

g.  $(5 - x)^2 = 12$

Answer: \_\_\_\_\_

h.  $3x^2 - 4x + 1 = 0$

Answer: \_\_\_\_\_

i.  $2(3x - 1) - 2x(x - 1) = 3x^2 - 4x + 2$

Answer: \_\_\_\_\_

j.  $\sqrt[3]{5-x} = -3$

Answer: \_\_\_\_\_

k.  $(2x + 1)^3 = -8$

Answer: \_\_\_\_\_

l.  $(2x - 1)^4 = 16$

Answer: \_\_\_\_\_

m.  $(x + 1)^2 - 3 = 0$

Answer: \_\_\_\_\_

n.  $\sqrt{3x + 1} = \sqrt{2 - x}$

Answer: \_\_\_\_\_

o.  $\sqrt{5 - 2y} = y - 3$

Answer: \_\_\_\_\_

3. Solve the following inequalities. Graph your solution and then write your answer in the interval notation. (6 pts each)

a.  $|3 - x| < \frac{2}{3}$

Answer: \_\_\_\_\_

b.  $|3t + 4| \geq 6$

Answer: \_\_\_\_\_

c.  $-2x < -3x - 4 < 1 - 5x$

Answer: \_\_\_\_\_

d.  $\frac{1}{3}(x + 1) - \frac{2}{5} > \frac{3}{2}(x - 1) + \frac{1}{2}$

Answer: \_\_\_\_\_