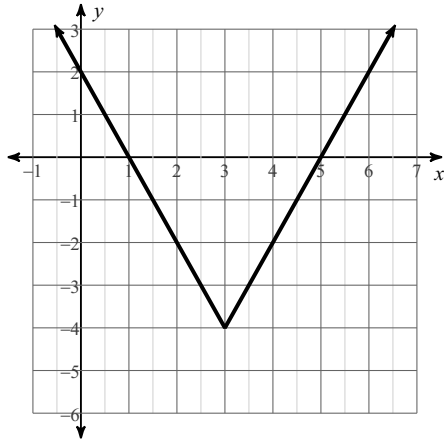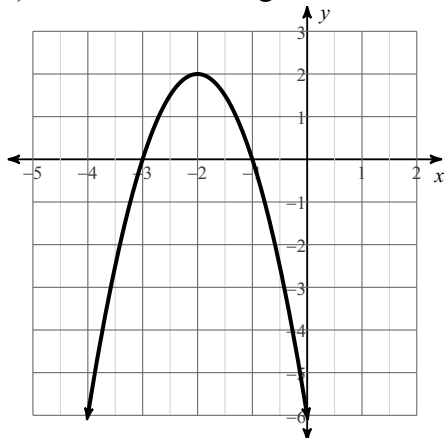# SM2 HW #7-1 (Unit 6 Weak Areas and Geometry, Midpoint)   Period____

1) a) Where is the function increasing?
   b) Where is the function decreasing?
   c) Where is the function positive?
   d) Where is the function negative?
   e) What is the minimum function value?
   f) Where are the extrema and what type are they?
   g) What is the end behavior? (use "infinity notation")
   h) What is the range?
   i) What is the average rate of change between $x = 1$ and $x = 3$?

2) a) Where is the function increasing?
   b) Where is the function decreasing?
   c) Where is the function positive?
   d) Where is the function negative?
   e) What is the maximum function value?
   f) Where are the extrema and what type are they?
   g) What is the end behavior? (use "infinity notation")
   h) What is the range?
   i) What is the average rate of change between $x = 1$ and $x = 3$?

3) a) Where is the function increasing?
   b) Where is the function decreasing?
   c) Where is the function positive?
   d) Where is the function negative?
   e) What is the minimum function value?
   f) Where are the extrema and what type are they?
   g) What is the end behavior? (use "infinity notation")
   h) What is the domain?
   i) What is the range?
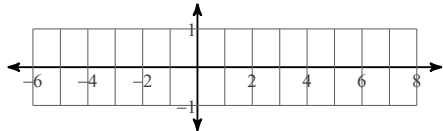   j) What is the average rate of change between x = 3 and x = 4?
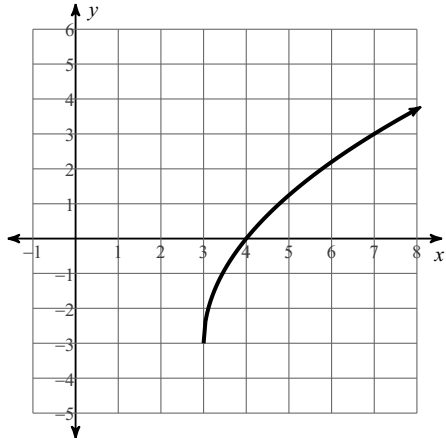
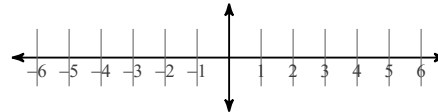**Solve each equation.**

4) $r^2 = 3r + 28$

5) $a^2 = 5a$

6) a) Graph the solution to the inequality.
   b) Write the solution in interval notation.

$x^2 - 6x - 16 \geq 0$

7) a) Graph the solution to the inequality.
   b) Write the solution in interval notation.

$2x^2 - 8x - 24 \geq 0$

Simplify. Your answer should contain only positive exponents.

8) $m^4 n^{-4} \cdot 2m^{-4} n^{-3}$

9) $\left(4y^2\right)^{-3}$

10) $\dfrac{m^{-2}}{4mn^3}$
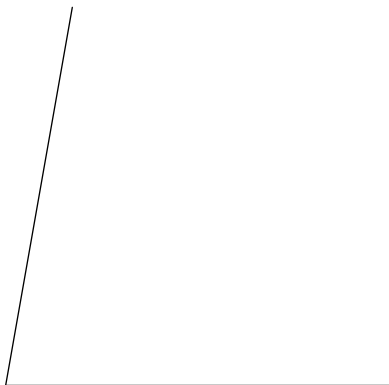
11) $a^{-3} b^{\frac{5}{3}} \cdot 3ab^{\frac{1}{4}}$
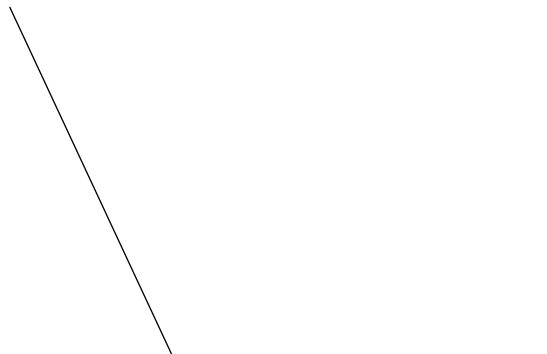
12) $\left(x^{-\frac{3}{4}}y^{-2}\right)^{-\frac{7}{4}}$

13) $\dfrac{3x^{-2}y^{\frac{4}{3}}}{yx^2}$

Find the measure of each angle to the nearest degree.
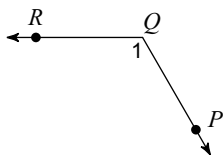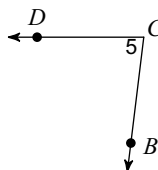
14)

15)

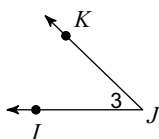**Name each angle in four ways.**

16)

17)

18)

Find the midpoint of the line segment with the given endpoints.

19) $(4, -3), (-8, 10)$

20) $(-7, -4), (-6, 8)$

Find the other endpoint of the line segment with the given endpoint and midpoint.

21) Endpoint: $(0, -8)$, midpoint: $(-6, 4)$

22) Endpoint: $(8, -7)$, midpoint: $(8, 10)$