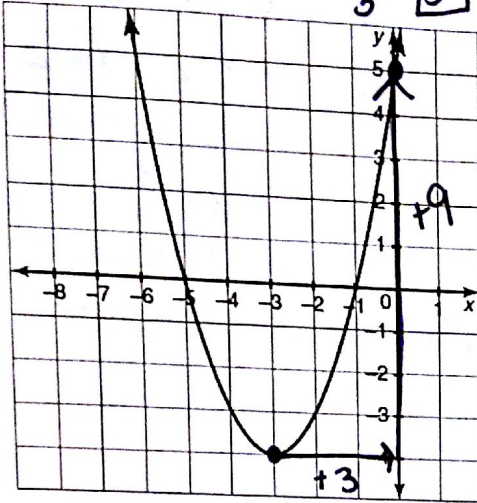


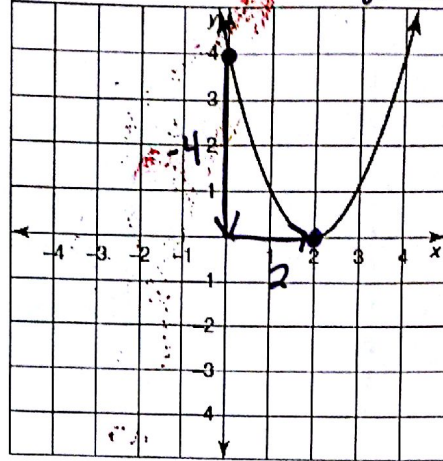
Day 4 - Average Rate of Change

Find the average rate of change for the given intervals:

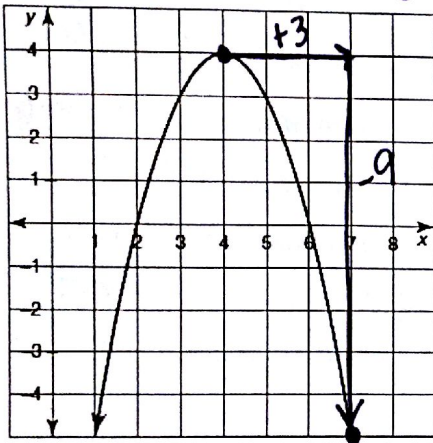
1. $-3 \leq x \leq 0$ R.O.C. = $\frac{9}{3} = \boxed{3}$



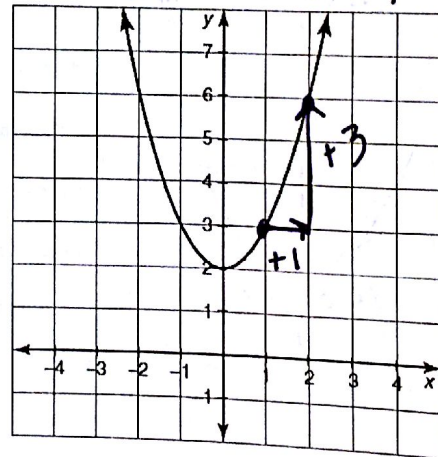
2. $0 \leq x \leq 2$ R.O.C. = $\frac{-4}{2} = \boxed{-2}$



3. $4 \leq x \leq 7$ R.O.C. = $\frac{-9}{3} = \boxed{-3}$



4. $-1 \leq x \leq 2$ R.O.C. = $\frac{3}{1} = \boxed{3}$



Find the average rate of change for the given equations on the given intervals:

5. $y = x^2 - 4x + 6; 2 \leq x \leq 4$

$x = 2$ $y = (2)^2 - 4(2) + 6$
 $y = 2$
 $x = 4$ $y = (4)^2 - 4(4) + 6$
 $y = 6$

Points: (2, 2) and (4, 6)

$m = \frac{6-2}{4-2} = \frac{4}{2} = \boxed{2}$

6. $y = x^2 - 4x + 1; -1 \leq x \leq 2$

$x = -1$ $y = (-1)^2 - 4(-1) + 1$
 $y = 6$
 $x = 2$ $y = (2)^2 - 4(2) + 1$
 $y = -3$

Points: (-1, 6) and (2, -3)

$m = \frac{-3-6}{2-(-1)} = \frac{-9}{3} = \boxed{-3}$

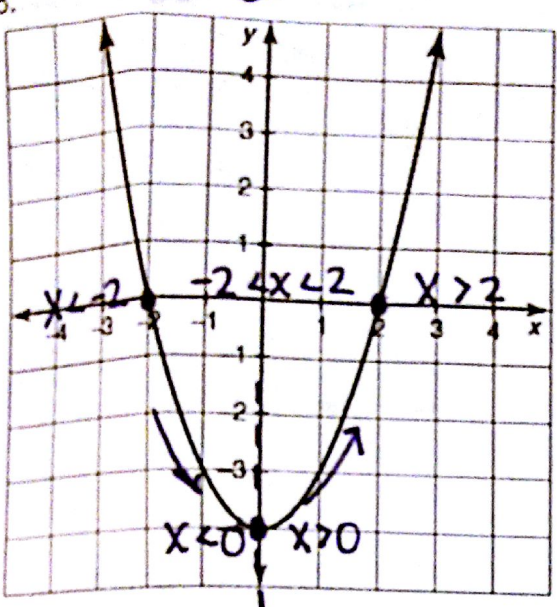
7. $y = -x^2 - 6x - 10; -7 \leq x \leq -3$

$x = -7$ $y = -(-7)^2 - 6(-7) - 10$
 $y = -17$
 $x = -3$ $y = -(-3)^2 - 6(-3) - 10$
 $y = -1$

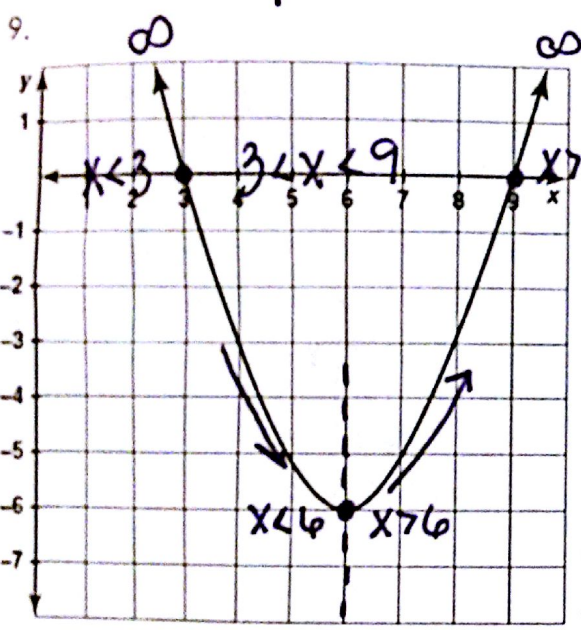
Points: (-7, -17) and (-3, -1)

$m = \frac{-1 - (-17)}{-3 - (-7)} = \frac{16}{4} = \boxed{4}$

8. More Practice with Characteristics: Name the characteristics for each graph given

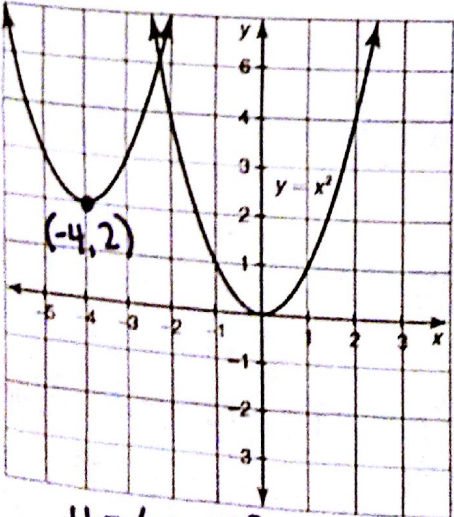


Domain: \mathbb{R}
 Range: $y \geq -4$
 Vertex: $(0, -4)$
 Axis of Sym. $x = 0$
 Y-Intercept: $(0, -4)$
 Zeros: $x = -2, x = 2$
 Extrema: minimum
 Max/Min Value: $y = -4$
 Int of Inc: $x > 0$
 Int of Dec: $x < 0$
 Positive: $x < -2$ or $x > 2$
 Negative: $-2 < x < 2$
 End Behavior: As $x \rightarrow -\infty, f(x) \rightarrow \infty$. As $x \rightarrow \infty, f(x) \rightarrow \infty$



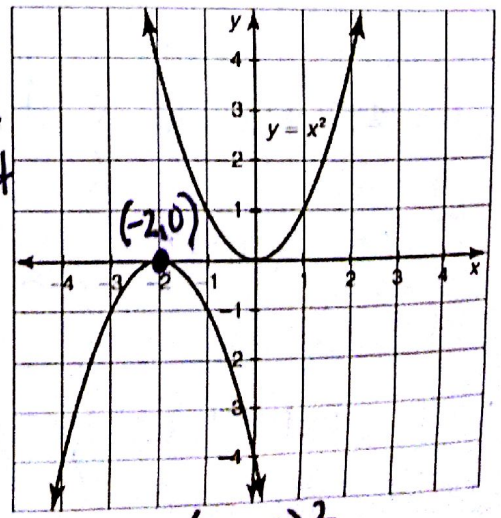
Domain: \mathbb{R}
 Range: $y \geq -6$
 Vertex: $(6, -6)$
 Axis of Sym. $x = 6$
 Y-Intercept: can't tell
 Zeros: $x = 3, x = 9$
 Extrema: minimum
 Max/Min Value: $y = -6$
 Int of Inc: $x > 6$
 Int of Dec: $x < 6$
 Positive: $x < 3$ or $x > 9$
 Negative: $3 < x < 9$
 End Behavior: As $x \rightarrow -\infty, f(x) \rightarrow \infty$. As $x \rightarrow \infty, f(x) \rightarrow \infty$

10. Describe the transformations from the parent function $y = x^2$ to the second graph. Then write the equation of the transformed graph.



left 4
up 2

$y = (x + 4)^2 + 2$



left 2
reflect

$y = -(x + 2)^2$