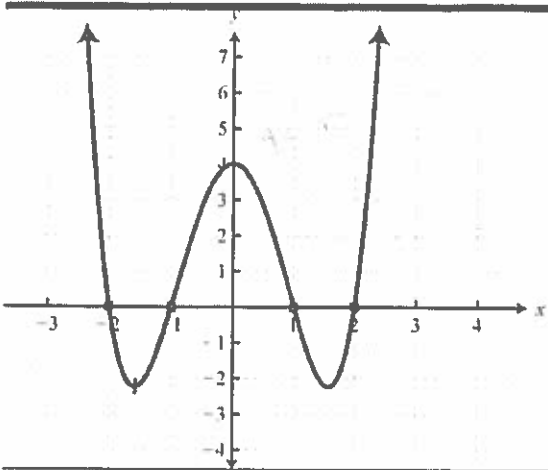
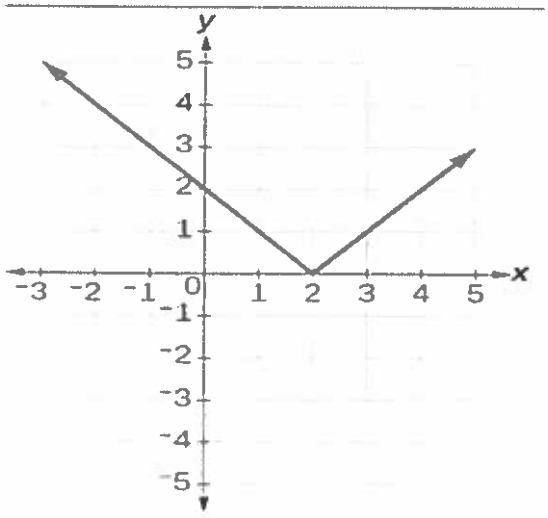


1



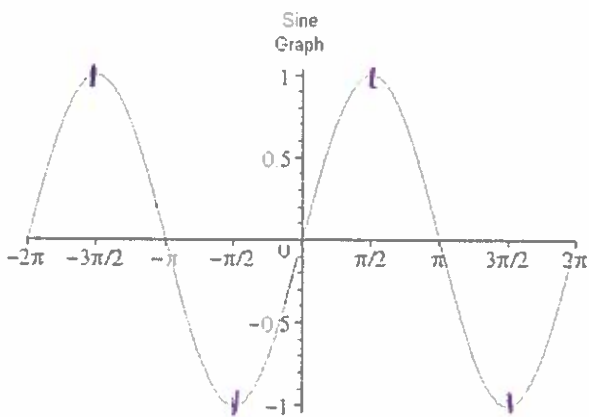
Domain TR Range  $[-2.2, \infty)$   
 Increasing Intervals  $(-1.5, 0)$  and  $(1.5, +\infty)$   
 Decreasing Intervals  $(-\infty, -1.5)$  and  $(0, 1.5)$   
 Constant Intervals none  
 Max  $\infty$  Min about -2.2  
 Relative Maximums 4 @ (0, 4)  
 Relative Minimums —  
 X-Intercepts  $(-2, 0), (-1, 0), (1, 0), (2, 0)$   
 Y-Intercepts  $(0, 4)$

2



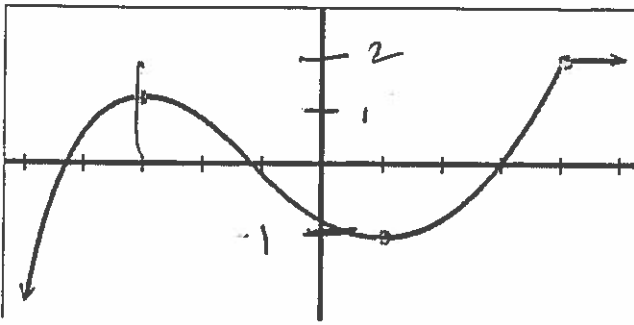
Domain TR Range  $[0, +\infty)$   
 Increasing Intervals  $(2, +\infty)$   
 Decreasing Intervals  $(-\infty, 2)$   
 Constant Intervals none  
 Max  $\infty$  Min 0 at (2, 0)  
 Relative Maximums —  
 Relative Minimums —  
 X-Intercepts  $(2, 0)$   
 Y-Intercepts  $(0, 2)$

3



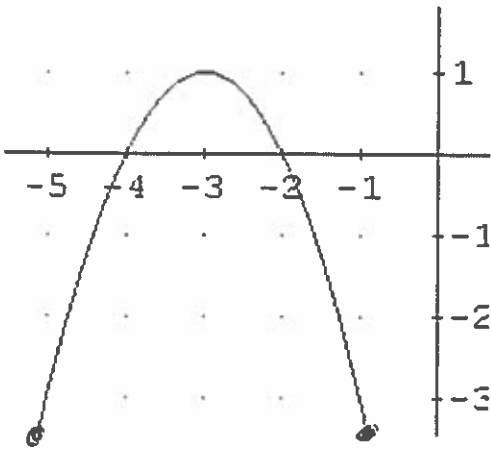
Domain  $[-2\pi, 2\pi]$  Range  $[-1, 1]$   
 Increasing Intervals  $(-2\pi, -\frac{3\pi}{2})$ ,  $(-\frac{\pi}{2}, \frac{\pi}{2})$ ,  $(\frac{3\pi}{2}, 2\pi)$   
 Decreasing Intervals  $(-\frac{3\pi}{2}, -\frac{\pi}{2})$ ,  $(\frac{\pi}{2}, \frac{3\pi}{2})$   
 Constant Intervals none  
 Max 1 @  $(-\frac{3\pi}{2}, 1)$  and  $(\frac{\pi}{2}, 1)$  Min -1 @  $(-\frac{\pi}{2}, -1)$  and  $(\frac{3\pi}{2}, -1)$   
 Relative Maximums —  
 Relative Minimums —  
 X-Intercepts  $(-2\pi, 0)$ ,  $(-\pi, 0)$ ,  $(0, 0)$ ,  $(\pi, 0)$ ,  $(2\pi, 0)$   
 Y-Intercepts  $(0, 0)$

4



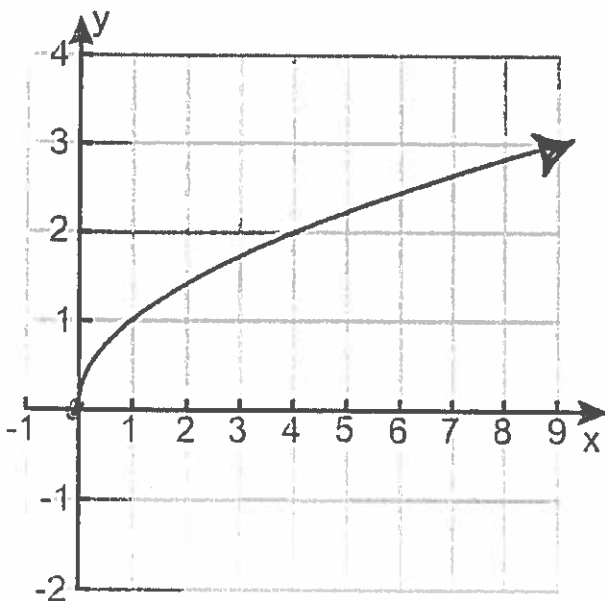
Domain TR Range  $(-\infty, 2]$   
 Increasing Intervals  $(-\infty, -3), (1, 4)$   
 Decreasing Intervals  $(-3, 1)$   
 Constant Intervals  $x \geq 4$   
 Max 2 where  $x \geq 4$  Min  $-\infty$   
 Relative Maximums 1 @  $(-3, 1)$   
 Relative Minimums -1 @  $(1, -1)$   
 X-Intercepts  $(3, 0), (-1.2, 0), (-4.4, 0)$   
 Y-Intercepts  $(0, -8)$  approx.

5



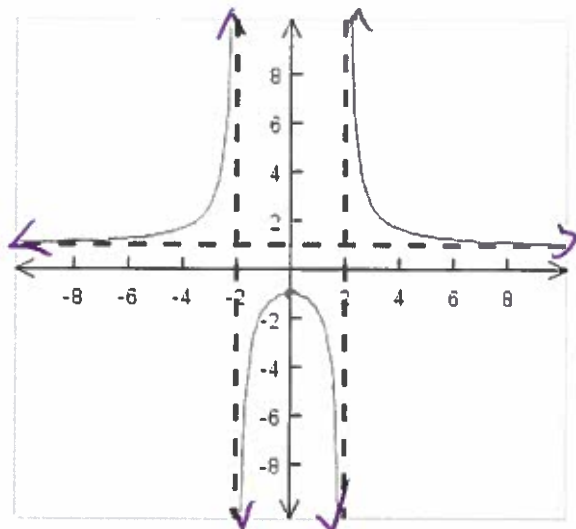
Domain  $[-5, -1]$  Range  $[-3.5, 1]$  approx  
 Increasing Intervals  $(-5, -3)$   
 Decreasing Intervals  $(-3, -1)$   
 Constant Intervals none.  $(-1, -3.5)$   
 Max 1 @  $(-3, 1)$  Min approx  $-3.5$  @  $(-5, -3.5)$   
 Relative Maximums —  
 Relative Minimums —  
 X-Intercepts  $(-2, 0), (-4, 0)$   
 Y-Intercepts none.

6



Domain  $[0, +\infty)$  Range  $[0, +\infty)$   
 Increasing Intervals  $[0, +\infty)$   
 Decreasing Intervals none  
 Constant Intervals none  
 Max  $+\infty$  Min 0 @  $(0, 0)$   
 Relative Maximums —  
 Relative Minimums —  
 X-Intercepts  $(0, 0)$   
 Y-Intercepts  $(0, 0)$

7



Domain  $\mathbb{R}$  except 2 and -2 Range  $(-\infty, -1] \cup (1, +\infty)$

Increasing Intervals  $(-\infty, -2)$   $(-2, 0)$

Decreasing Intervals  $(0, 2)$   $(2, +\infty)$

Constant Intervals none

Max  $+\infty$  Min  $-\infty$

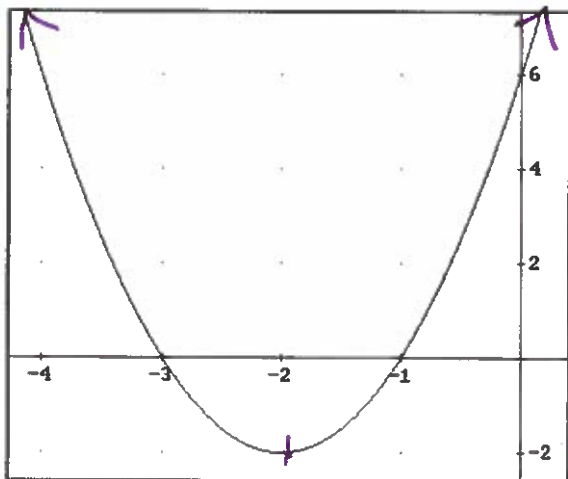
Relative Maximums  $-1$  @  $(0, -1)$

Relative Minimums limit of 1 for  $x < -2$  and  $x > 2$

X-Intercepts none

Y-Intercepts  $(0, -1)$

8



Domain  $(-\infty, +\infty)$  Range  $[-2, +\infty)$

Increasing Intervals  $(-2, +\infty)$

Decreasing Intervals  $(-\infty, -2)$

Constant Intervals none

Max  $\infty$  Min  $-2$  at  $(-2, -2)$

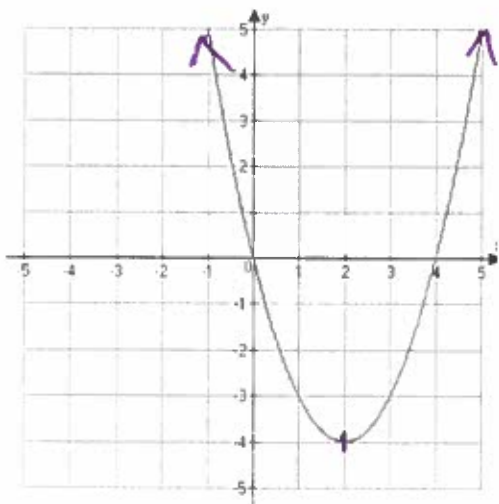
Relative Maximums —

Relative Minimums —

X-Intercepts  $(-1, 0)$  and  $(-3, 0)$

Y-Intercepts  $(0, 6)$

9



Domain  $\mathbb{R}$  Range  $[-4, +\infty)$

Increasing Intervals  $(2, +\infty)$

Decreasing Intervals  $(-\infty, 2)$

Constant Intervals none

Max  $\infty$  Min  $-4$  @  $(2, -4)$

Relative Maximums —

Relative Minimums —

X-Intercepts  $(0, 0)$ ,  $(4, 0)$

Y-Intercepts  $(0, 0)$