G-3
Solutions
Part 1

1) Domain: $(-\infty, 3]$
Range: $(-\infty, \infty)$

2) Domain: $[-4, 4]$
Range: $[-4, 4]$

3) Domain: $(-\infty, \infty)$
Range: $(-\infty, \infty)$

4) Domain: $[-4, \infty)$
Range: $[-3, \infty)$

5) Domain: $[-8, 2]$
Range: $[-5, 5]$

6) Domain: $(-\infty, \infty)$
Range: $[-5, \infty)$

7) Domain: $[1, 7]$
Range: $[-3, 0]$

8) Domain: $(-\infty, \infty)$
Range: $(-\infty, \infty)$

1) $y = x^2 - 3$

relative maxs: None
relative mins: (0,-3)
x-intercepts: $\{\pm 1.73\}$
y-intercepts: (0, -3)
domain: $(-\infty, \infty)$
range: $[-3, \infty)$

2) $y = -\sqrt{25 - x^2}$

relative maxs: (-5,0) and (5,0)
relative mins: (0, -5)
x-intercepts: $\{\pm 5\}$
y-intercepts: (0, -5)
domain: [-5,5]
range: [-5,0]

3) $y = \frac{5}{2}x - 3$

relative maxs: None
relative mins: None
x-intercepts: {1.2}
y-intercepts: (0,-3)
domain: $(-\infty, \infty)$
range: $(-\infty, \infty)$

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

relative maxs: None
relative mins: None
x-intercepts: {1}
y-intercepts: (0,-0.27) and (0,-3.73)
domain: [-3,0)
range: $(-\infty, \infty)$

5) $y^2 = 36 - x^2$

relative maxs: (0,6)
relative mins: (0,-6)
x-intercepts: $\{\pm 6\}$
y-intercepts: (0,6) and (0,-6)
domain: [-6,6]
range: [-6,6]

6) $2x + 3y + 12 = 0$

relative maxs: None
relative mins: None
x-intercepts: {6}
y-intercepts: (0,4)
domain: $(-\infty,\infty)$
range: $(-\infty,\infty)$

7) $y = \frac{1}{x^2}$

relative maxs: None
relative mins: None
x-intercepts: None
y-intercepts: None
domain: $(-\infty,0) \cup (0,\infty)$
range: $(0,\infty)$

This graph never touches the x- or y- axes. These are asymptotes.

8) $y = |x| + x$

relative maxs: None
relative mins: weird: None, or absolute min: $y = 0$
x-intercepts: weird: $(-\infty,0]$
y-intercepts: (0,0)
domain: $(-\infty,\infty)$
range: $[0,\infty)$