

# Section 4.6 Polynomial Functions - Solutions

1. a) constant function  $m=0$   $y=c$
- b) linear function  $m \neq 0$   $y=x$
- c) quadratic function  $y=x^2$
- d) cubic function  $y=x^3$

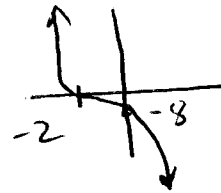
NOT:

- e)  $y = \frac{1}{x}$
- f)  $y = \sqrt{x}$

2. a)  $y = x^{1/2}$  is a power function but not a polynomial
- b)  $y = x^2 + 6$  - not a power function because power functions only have one term (is a polynomial)

8.  $y = -(x+2)^3$   
cubic

Shifted to the left by 2  
and reflected across  
horizontal axis



11.  $y = -2(x+5)^4$   
(-5, 0) (0, -1250)

4th power; vertical stretch (expansion) by 2, reflect across horizontal axis, shifted to the left by 5.

12.  $y = -2x^4 + 5$   
(0, 5)

4th power; vertical expansion only by 2, reflected across horizontal axis, vertical shift up of 5.  
x-intercepts  $0 = -2x^4 + 5 \Rightarrow x^4 = 5/2$   
 $(\sqrt[4]{5/2}, 0) + (-\sqrt[4]{5/2}, 0)$

17. Not degree one - there are 4 turning points.

18. Not a polynomial - there is a corner.

19. Not degree 3 - ends point in the same direction

20. Not a polynomial - there is a jump

21. Not degree 5 - ends point in the same direction

22. Not degree 5 - there is a horizontal asymptote

29.  $y = 2x(x-2)(x-1)$

x-int (0,0) (1,0) (2,0)

y-int (0,0)

