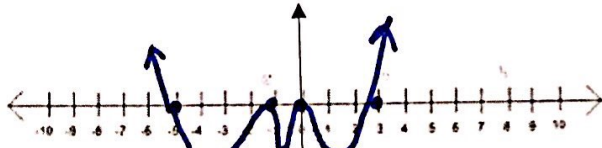
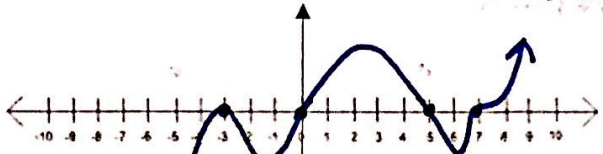


Name: _____

Sketch the graph of each polynomial: State the degree – end behavior– identify each zero and its multiplicity

1.) $f(x) = x(x+3)^2(x-5)(x-7)^3$

2.) $f(x) = x^2(x+5)(x-3)(x+1)^2$

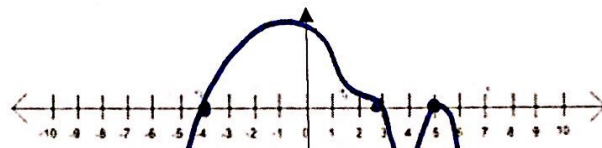
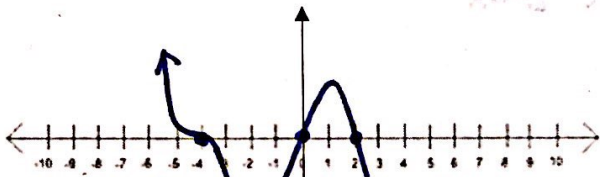


Degree: 7th, left end behavior: $x \rightarrow -\infty$
 $f(x) \rightarrow -\infty$
Right end behavior: $x \rightarrow \infty$
 $f(x) \rightarrow \infty$

degree: 6th, Left end behavior: $x \rightarrow -\infty$ $f(x) \rightarrow \infty$
right end behavior: $x \rightarrow \infty$ $f(x) \rightarrow \infty$

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

4.) $y = -(x-5)^2(x-3)^3(x+4)$

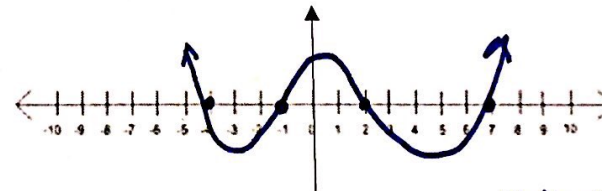
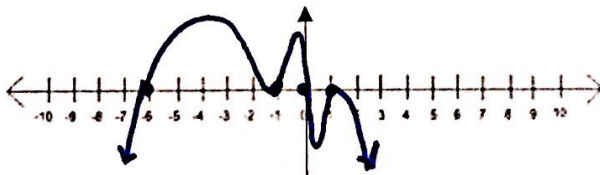


Degree: 5th, left end behavior: $x \rightarrow -\infty$
 $f(x) \rightarrow \infty$
Right end behavior: $x \rightarrow \infty$
 $f(x) \rightarrow -\infty$

degree: 6th, Left end behavior: $x \rightarrow -\infty$
 $f(x) \rightarrow -\infty$
right end behavior: $x \rightarrow \infty$
 $f(x) \rightarrow \infty$

5.) $y = -x(x+6)(x-1)^2(x+1)^2$

6.) $f(x) = (x+4)(x-2)(x-7)(x+1)$

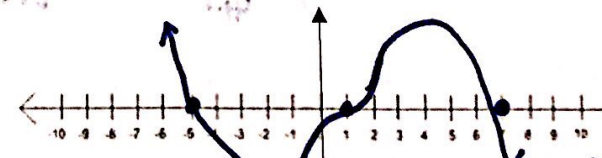
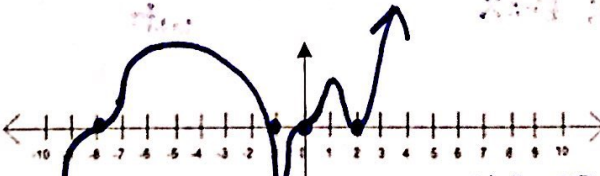


Degree: 6th, left end behavior: $x \rightarrow -\infty$
 $f(x) \rightarrow -\infty$
Right end behavior: $x \rightarrow \infty$
 $f(x) \rightarrow -\infty$

degree: 4th, Left end behavior: $x \rightarrow -\infty$
 $f(x) \rightarrow \infty$
right end behavior: $x \rightarrow \infty$
 $f(x) \rightarrow \infty$

7.) $y = x^3(x-2)^2(x+8)^3(x+1)$

8.) $f(x) = -(x-7)(x+5)(x-1)^3$

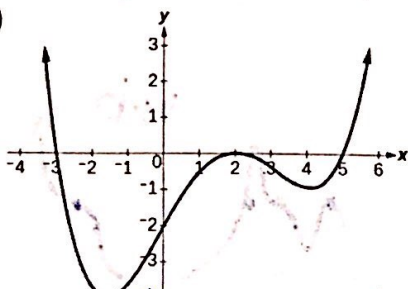


Degree: 9th, left end behavior: $x \rightarrow -\infty$
 $f(x) \rightarrow -\infty$
Right end behavior: $x \rightarrow \infty$
 $f(x) \rightarrow \infty$

degree: 5th, Left end behavior: $x \rightarrow -\infty$
 $f(x) \rightarrow \infty$
right end behavior: $x \rightarrow \infty$
 $f(x) \rightarrow -\infty$

State the degree, roots and multiplicity & Write each polynomial in terms of its linear factors.

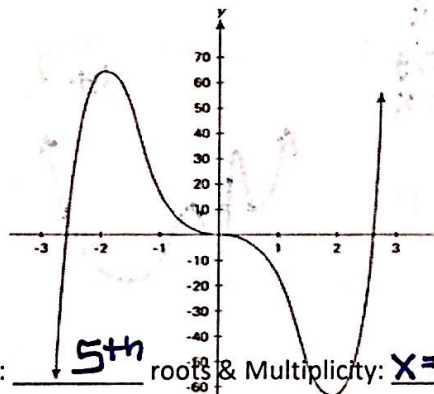
9.)



Degree: 4th roots & Multiplicity: $x = -3$ $x = 2$ M2 $x = 5$

$$F(x) = \underline{(x+3)(x-2)^2(x-5)}$$

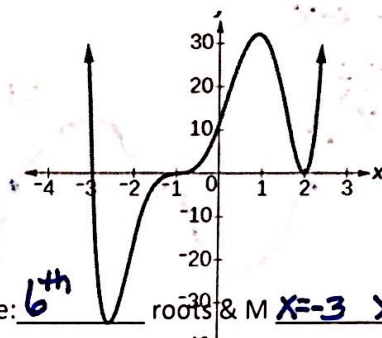
11.)



Degree: 5th roots & Multiplicity: $x = -5/2$ $x = 0$ M3 $x = 5/2$

$$F(x) = \underline{(2x+5)x^3(x-5)}$$

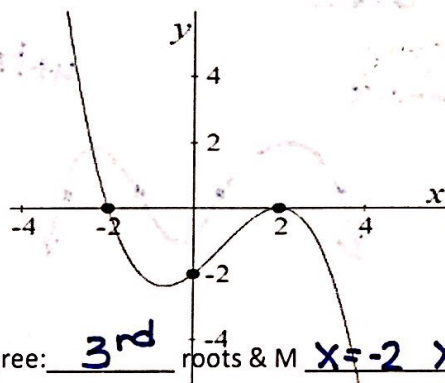
10.)



degree: 6th roots & M $x = -3$ $x = -1$ M3 $x = 2$ M2

$$f(x) = \underline{(x+3)(x+1)^3(x-2)^2}$$

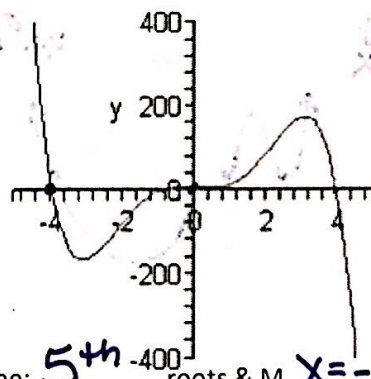
12.)



degree: 3rd roots & M $x = -2$ $x = 2$ M2

$$f(x) = \underline{-(x+2)(x-2)^2}$$

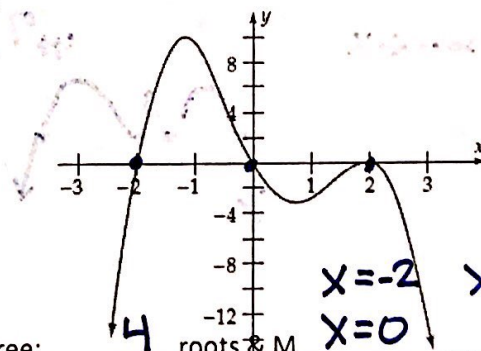
14.)



degree: 5th roots & M $x = -4$ $x = 0$ M3 $x = 4$

$$f(x) = \underline{-x^3(x+4)(x-4)}$$

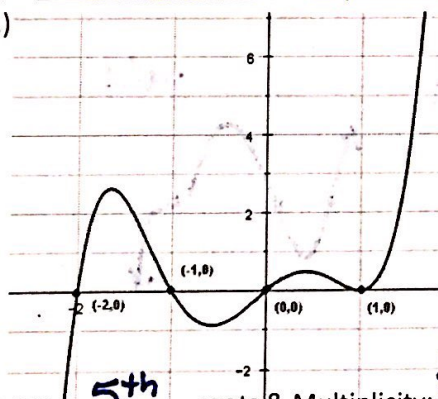
16.)



degree: 4 roots & M $x = -2$ $x = 2$ M2 $x = 0$

$$f(x) = \underline{-x(x+2)(x-2)^2}$$

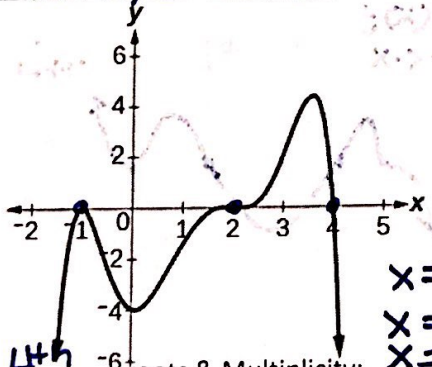
13.)



Degree: 5th roots & Multiplicity: $x = -2$ $x = 0$ $x = -1$ $x = 1$ M2

$$F(x) = \underline{x(x+2)(x+1)(x-1)^2}$$

15.)



Degree: 4th roots & Multiplicity: $x = -1$ M2 $x = 2$ M3 $x = 4$ M1

$$F(x) = \underline{-(x+1)^2(x-2)^3(x-4)}$$