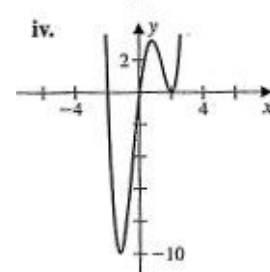
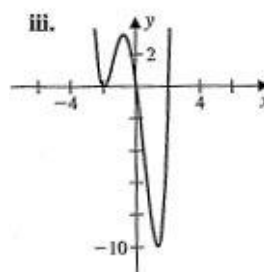
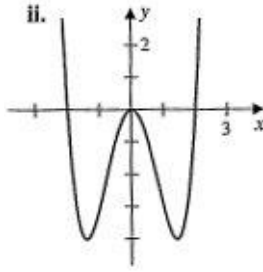
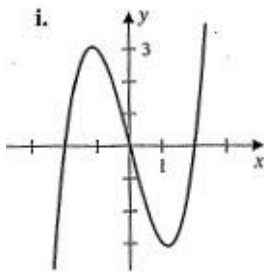


### 5.1/3 – Graphing Polynomial Functions

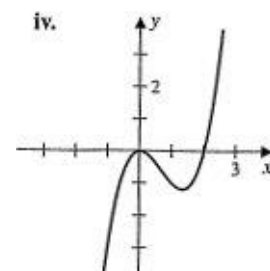
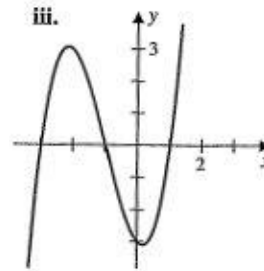
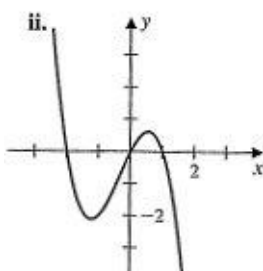
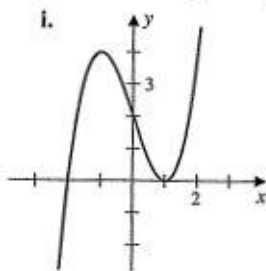
1. Match the equation with the graph. Do not use any graphing technology.

- a.  $y = x(x + 2)^2(x - 2)$     b.  $y = x(x + 2)(x - 2)^2$     c.  $y = x(x + 2)(x - 2)$     d.  $y = x^2(x + 2)(x - 2)$



2. Match the equation with the graph. Do not use any graphing technology.

- a.  $y = (x - 1)(x + 1)(x + 3)$     b.  $y = x^2(x - 2)$     c.  $y = (x + 2)(x - 1)^2$     d.  $y = x(x + 2)(1 - x)$



Analyze each polynomial function,  $f(x)$ , for its end behavior,  $x$ -intercepts/zeros, and  $y$ -intercept and then sketch its graph by hand.

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

LEADING TERM:

END BEHAVIOR:

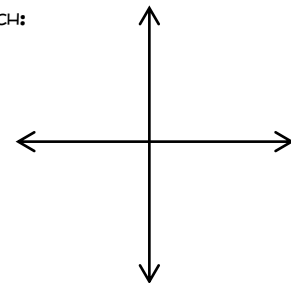
$\lim_{x \rightarrow -\infty} f(x) =$        $\lim_{x \rightarrow \infty} f(x) =$

$y$ -INTERCEPT:

$x$ -INTERCEPT:

ZERO	MULTIPLICITY	CROSS/TOUCH

SKETCH:



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

LEADING TERM:

END BEHAVIOR:

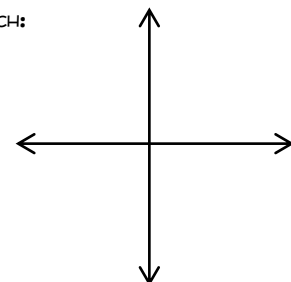
$\lim_{x \rightarrow -\infty} f(x) =$        $\lim_{x \rightarrow \infty} f(x) =$

$y$ -INTERCEPT:

$x$ -INTERCEPT:

ZERO	MULTIPLICITY	CROSS/TOUCH

SKETCH:



5.  $f(x) = (x + 3)(x + 1)^3(x + 4)$

LEADING TERM:

END BEHAVIOR:

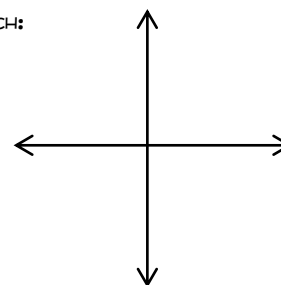
$$\lim_{x \rightarrow -\infty} f(x) = \quad \lim_{x \rightarrow \infty} f(x) =$$

 $y$ -INTERCEPT:

X-INTERCEPT:

ZERO	MULTIPLICITY	CROSS/TOUCH

SKETCH:



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

LEADING TERM:

END BEHAVIOR:

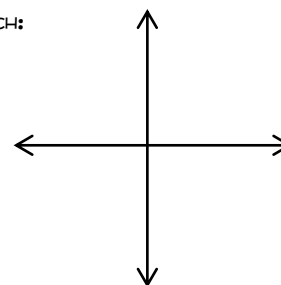
$$\lim_{x \rightarrow -\infty} f(x) = \quad \lim_{x \rightarrow \infty} f(x) =$$

 $y$ -INTERCEPT:

X-INTERCEPT:

ZERO	MULTIPLICITY	CROSS/TOUCH

SKETCH:



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

LEADING TERM:

END BEHAVIOR:

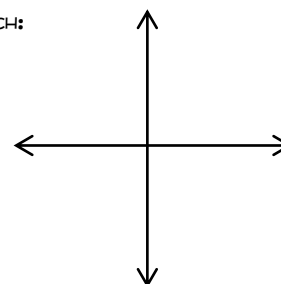
$$\lim_{x \rightarrow -\infty} f(x) = \quad \lim_{x \rightarrow \infty} f(x) =$$

 $y$ -INTERCEPT:

X-INTERCEPT:

ZERO	MULTIPLICITY	CROSS/TOUCH

SKETCH:



8.  $f(x) = x(x + 2)(x - 2)(x - 4)$

LEADING TERM:

END BEHAVIOR:

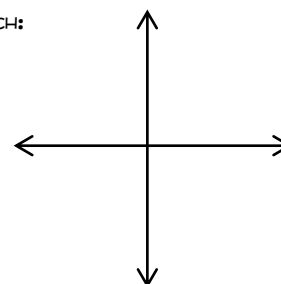
$$\lim_{x \rightarrow -\infty} f(x) = \quad \lim_{x \rightarrow \infty} f(x) =$$

 $y$ -INTERCEPT:

X-INTERCEPT:

ZERO	MULTIPLICITY	CROSS/TOUCH

SKETCH:



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

LEADING TERM:

END BEHAVIOR:

$$\lim_{x \rightarrow -\infty} f(x) = \quad \lim_{x \rightarrow \infty} f(x) =$$

 $y$ -INTERCEPT:

X-INTERCEPT:

ZERO	MULTIPLICITY	CROSS/TOUCH

SKETCH:

