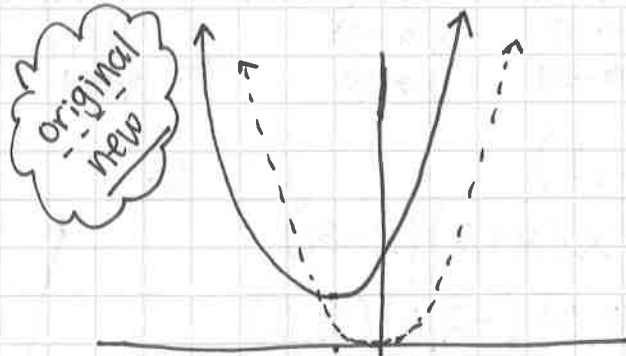
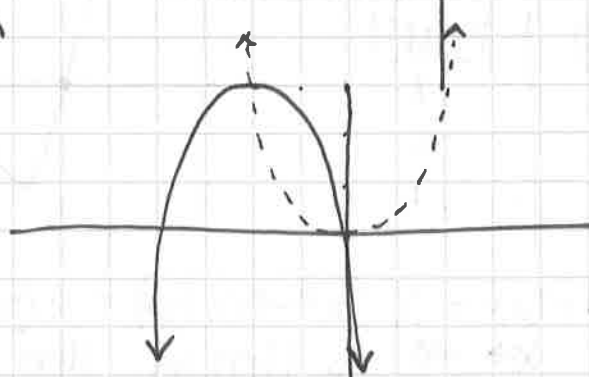


U3 Day 2 HW Key

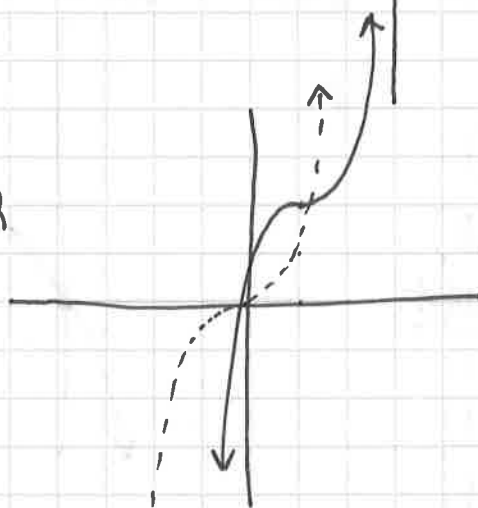
① $f(x) = (x+1)^2 + 1$
 left 1 up 1



② $f(x) = 3 - (x+2)^2$
 up 3 left 2
 reflect over x-axis



③ $f(x) = (x-1)^3 + 2$
 right 1 up 2



④ $f(x) = (x-1)(x-2)(x+4) = (x^2 - 2x - x + 2)(x+4) = x^3 - 2x^2 - x^2 + 2x + 4x^2 - 8x - 4x + 8$

1. $x \rightarrow \infty \quad y \rightarrow \infty$ $x \rightarrow -\infty \quad y \rightarrow -\infty$ or $\lim_{x \rightarrow \infty} \infty$ $\lim_{x \rightarrow -\infty} -\infty$

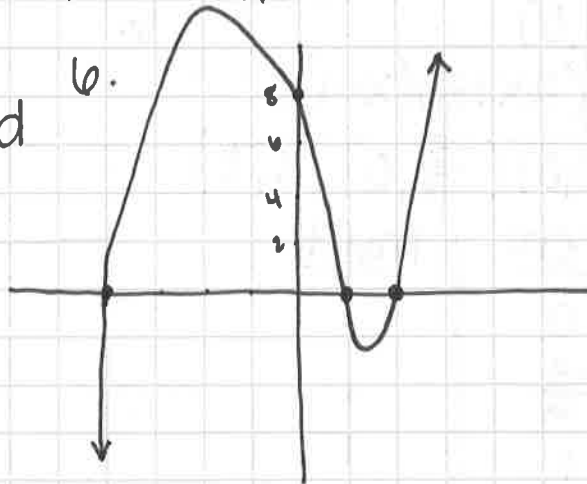
$x^3 + x^2 - 10x + 8$

2. (0, 8)

3. * already factored

4. (-4, 0) (1, 0) (2, 0)

zero	mult
-4	1
1	1
2	1



⑤ $f(x) = 4x - x^3 = x(-x^2 + 4) \rightarrow -x(x^2 - 4) = -x(x+2)(x-2)$

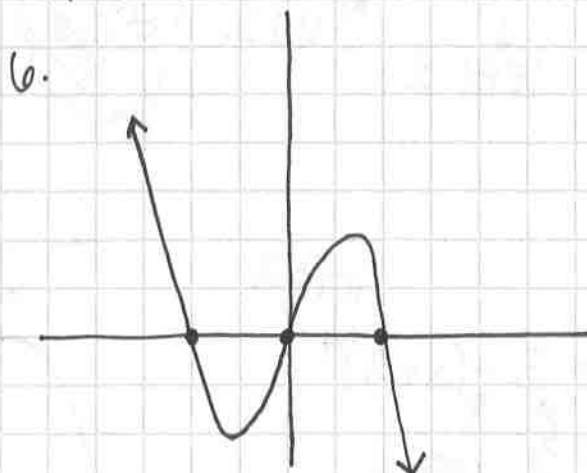
1. $x \rightarrow \infty$ $x \rightarrow -\infty$ or $\lim_{x \rightarrow \infty} -\infty$ $\lim_{x \rightarrow -\infty} \infty$
 $y \rightarrow -\infty$ $y \rightarrow \infty$

2. (0,0)

3. $-x(x+2)(x-2)$

4. (0,0) (-2,0) (2,0)

<u>zero</u>	<u>mult.</u>
0	1
-2	1
2	1



⑥ $f(x) = x^3 - 5x^2 + 6x = x(x^2 - 5x + 6) = x(x-3)(x-2)$

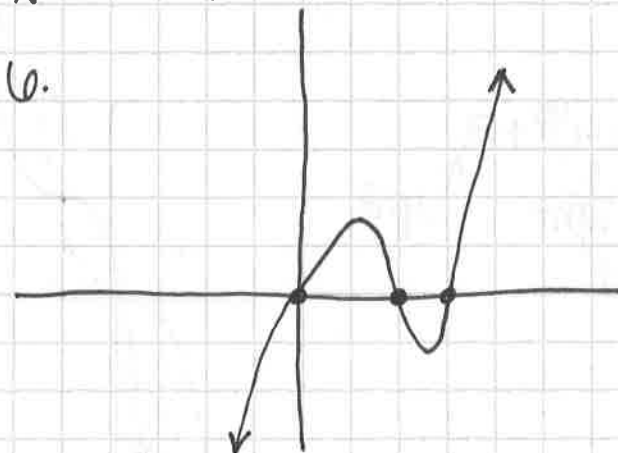
1. $x \rightarrow \infty$ $x \rightarrow -\infty$ or $\lim_{x \rightarrow \infty} \infty$ $\lim_{x \rightarrow -\infty} -\infty$
 $y \rightarrow \infty$ $y \rightarrow -\infty$

2. (0,0)

3. $x(x-3)(x-2)$

4. (0,0) (3,0) (2,0)

<u>zero</u>	<u>mult.</u>
0	1
3	1
2	1



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

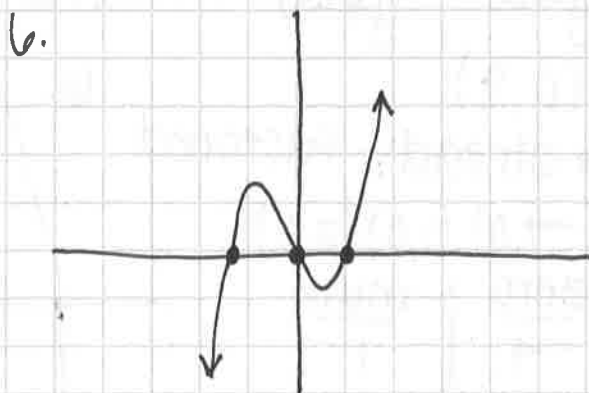
1. $x \rightarrow \infty$ $x \rightarrow -\infty$ or $\lim_{x \rightarrow \infty} \infty$ $\lim_{x \rightarrow -\infty} -\infty$
 $y \rightarrow \infty$ $y \rightarrow -\infty$

2. (0,0)

3. $x(2x+3)(x-1)$

4. (0,0) $(-\frac{3}{2}, 0)$ (1,0)

<u>zero</u>	<u>mult.</u>
0	1
$-\frac{3}{2}$	1
1	1



U3 Day 2 HW Key

⑧ $f(x) = x^2(x-3)(x+4)$

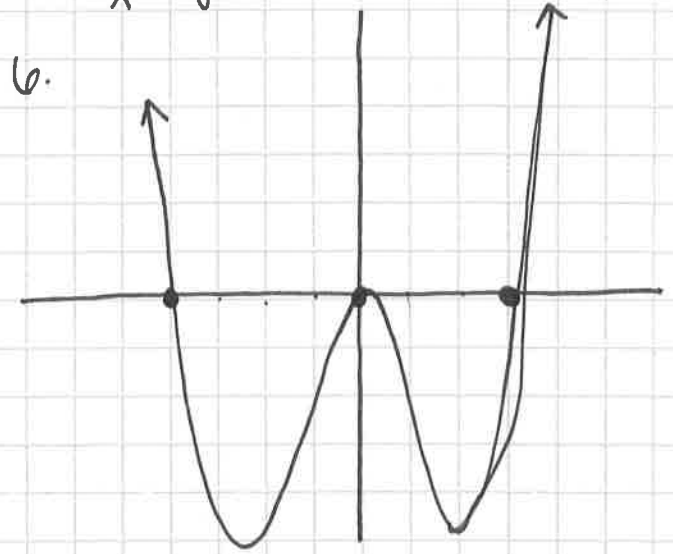
1. $x \rightarrow \infty \quad x \rightarrow -\infty$ OR $\lim_{x \rightarrow \infty} \infty \quad \lim_{x \rightarrow -\infty} \infty$
 $y \rightarrow \infty \quad y \rightarrow \infty$

2. (0,0)

3. * already factored

4. (0,0) (3,0) (-4,0)

zero	mult.
0	2 ← bounce!
3	1
-4	1



⑨ $f(x) = (x+1)^2(x-3)(x-1)$

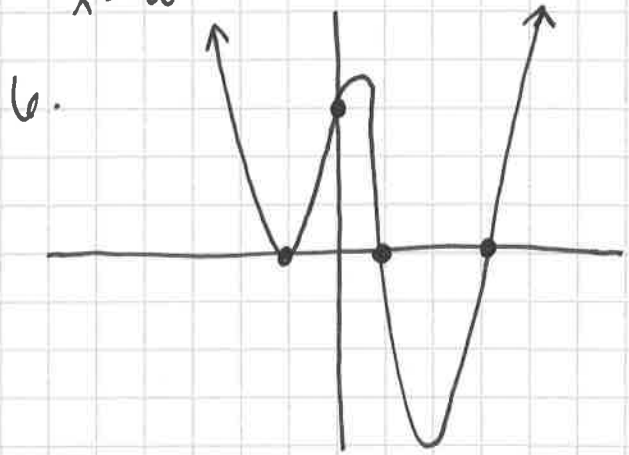
1. $x \rightarrow \infty \quad x \rightarrow -\infty$ OR $\lim_{x \rightarrow \infty} \infty \quad \lim_{x \rightarrow -\infty} \infty$
 $y \rightarrow \infty \quad y \rightarrow \infty$

2. (0,3)

3. * already factored

4. (-1,0) (3,0) (1,0)

zero	mult.
-1	2 ← bounce!
3	1
1	1



⑩ $f(x) = x^2(x-2)(x^2+3)$

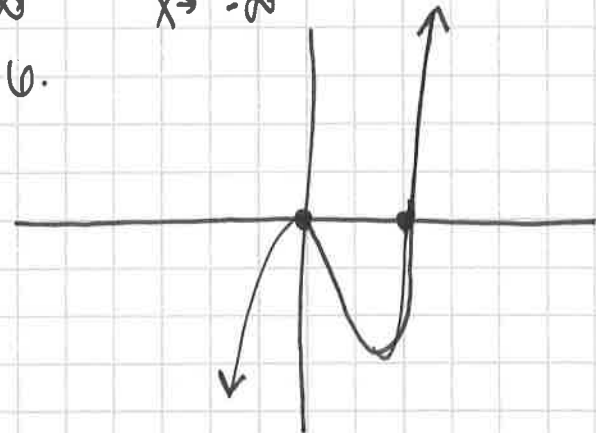
1. $x \rightarrow \infty \quad x \rightarrow -\infty$ OR $\lim_{x \rightarrow \infty} \infty \quad \lim_{x \rightarrow -\infty} -\infty$
 $y \rightarrow \infty \quad y \rightarrow -\infty$

2. (0,0)

3. * already factored

4. (0,0) (2,0)

zero	mult.
0	2 ← bounce!
2	1



* so there must be 2 complex roots!

