

Section 3.3 Homework Quiz

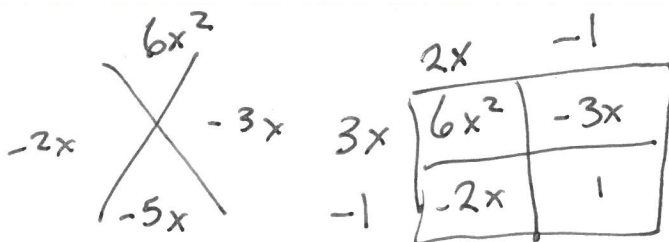
name: \_\_\_\_\_

1. Factor  $f(x)$  into linear factors given that  $k$  is a zero of  $f(x)$ .

$f(x) = 6x^3 + 13x^2 - 14x + 3 \quad k = -3$

$$\begin{array}{r} -3 \overline{) 6 \ 13 \ -14 \ 3} \\ \underline{-18 \ 15 \ -3} \\ 6 \ -5 \ 1 \ \boxed{0} \end{array}$$

$(x+3)(6x^2 - 5x + 1)$   
 $(x+3)(2x-1)(3x-1)$

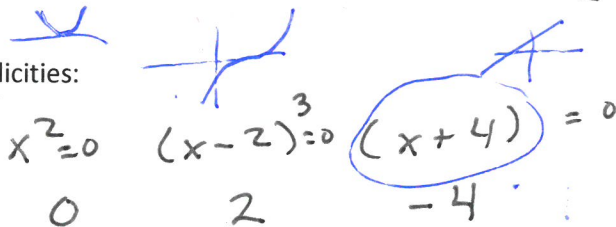


2. List all of the possible rational zeros of  $2x^3 + 13x^2 + 13x - 10$   $\rightarrow 1, 2, 5, 10$

$\pm 1, \pm 2, \pm 5, \pm 10, \pm \frac{1}{2}, \pm \frac{2}{2}, \pm \frac{5}{2}, \pm \frac{10}{2}$

3. List all of the zeros and their multiplicities:

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



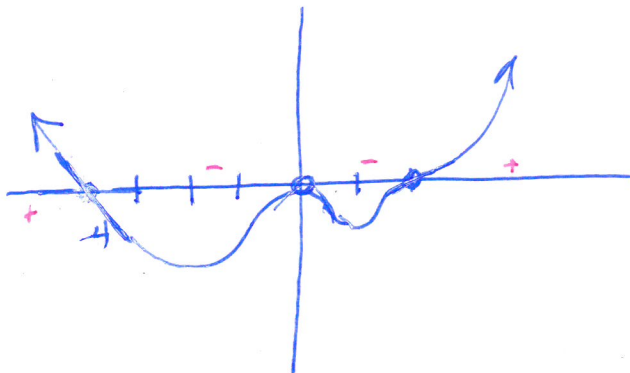
Zeros:

0      2      -4

multiplicities:

2      3      1

	$(-5)$	$(-2)$	0	$(1)$	$(3)$
$x^2$	+	+	+	+	+
$(x-2)^3$	-	-	-	+	+
$x+4$	-	+	+	+	+
	+	-	-	+	+



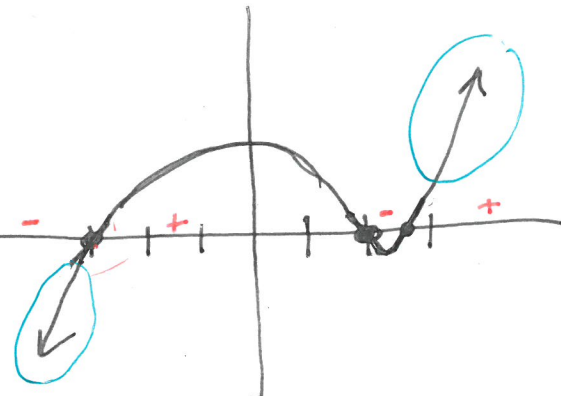
#17  $f(x) = (x-2)(2x+5)(x+3)$

$2x-5=0$   
 $x+3=0$

zeros:  $2$   $5/2 = 2\frac{1}{2}$   $-3$

multiplicity 2

	$-3$	$2$	$5/2$	
$x-2$	-	-	+	+
$2x-5$	-	-	-	+
$x+3$	-	+	+	+
	-	+	-	+



end behavior

$f(x) = 2x^3 - 3x^2 + 17x + 30$

#21 3.3

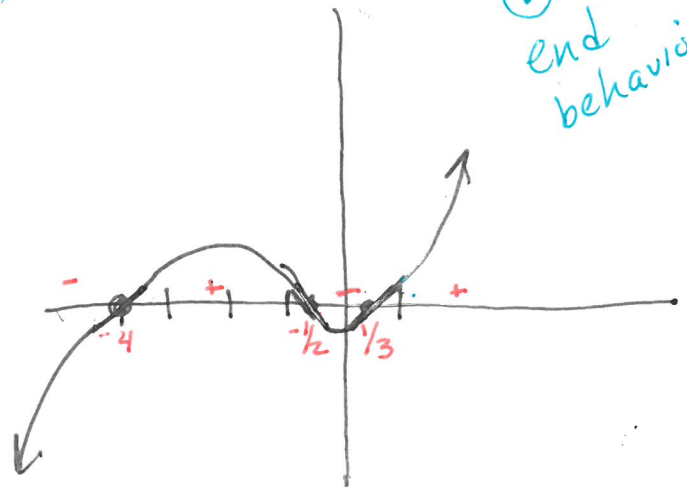
$f(x) = (x+4)(3x-1)(2x+1)$

zeros:  $-4$   $1/3$   $-1/2$

multiplicity: 1 1 1

	$-4$	$-1/2$	$1/3$	
$(x+4)$	-	+	+	+
$(3x-1)$	-	-	-	+
$(2x+1)$	-	-	+	+
	-	+	-	+

$x(3x)(2x) = 6x^3$



end behavior

← find the mistake!  
☹

$f(x) = 3x^4 + 5x^3 + 7x^2 + 6$       rational roots

$3x + 6 = 0$

$3x = -6$

$x = -\frac{6}{3}$

~~$x = -2$~~

6° 1, 2, 3, 6

3° 1, 3

$\pm 1 \quad \pm 2 \quad \pm 3 \quad \pm 6$

$\pm \frac{1}{3} \quad \pm \frac{2}{3}$   ~~$\pm \frac{3}{3}$~~   ~~$\pm \frac{6}{3}$~~

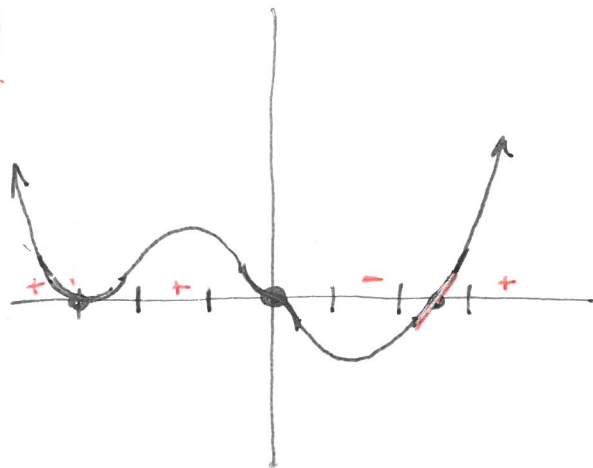
$f(x) = 2x^3(x+3)^2(2x-5)$

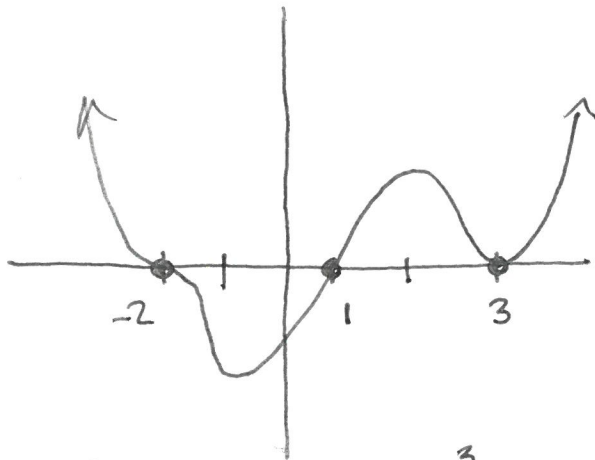
$2x^3 \cdot x^2 \cdot 2x = 4x^6$        $x^6$

zeros: 0      -3      5/2

multiplicities: 3      2      1

	-3	0	5/2	
$2x^3$	-	-	+	+
$(x+3)^2$	+	+	+	+
$(2x-5)$	-	-	-	+
	+	+	-	+





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

Sec. 1.7

$$x^2 > 7x - 10$$

$$x^2 - 7x + 10 > 0$$

$$(x-5)(x-2) > 0$$

zeros

$\downarrow$  5       $\downarrow$  2  
~~5~~

	2	5	
x-5	-	-	+
x-2	-	+	+
	+	-	+

