

Quiz Practice on back of worksheet

1)
$$\frac{6}{2n} + \frac{4}{4n^2 - 6n}$$

2)
$$\frac{4n}{n-3} - \frac{3}{5n+4}$$

3)
$$\frac{7n(n-10)}{(n-10)(n+8)} \cdot \frac{2(n+8)}{7n}$$

4)
$$\frac{p^2 - 7p - 8}{10p^3 - 80p^2} \div \frac{p^2 + 4p - 60}{10p^3 - 60p^2}$$

Quiz Practice on back of worksheet

$$1) \frac{(2n-3)6}{(2n-3)2n} + \frac{4}{(4n^2-6n)}$$

$$= \frac{12n-18 + 4}{2n(2n-3)} = \frac{12n-14}{2n(2n-3)}$$

$$= \frac{2(6n-7)}{2n(2n-3)}$$

$$2) \frac{(5n+4)4n}{(5n+4)(n-3)} - \frac{-3(n-3)}{(5n+4)}$$

$$= \frac{20n^2 + 16n - 3n + 9}{(5n+4)(n-3)}$$

$$= \frac{20n^2 + 13n + 9}{(5n+4)(n-3)}$$

$$3) \frac{7n(n-10)}{(n-10)(n+8)} \cdot \frac{2(n+8)}{7n}$$

$$= 2$$

$$4) \frac{(p^2-7p-8)(p^2+4p-60)}{(10p^3-80p^2)(10p^3-60p^2)}$$

$$= \frac{(p-8)(p+1) \cdot 10p^2(p-6)}{10p^2(p-8) \cdot 10p^2(p+10)}$$

$$= \frac{p+1}{p+10}$$

Chapter 4, Worksheet 1

Period__

Multiply

1) $(m+4)(6m^2+m+6)$

m	$6m^2$	m	$6m$
$+4$	$24m$	$4m$	24

$$6m^3 + 25m^2 + 10m + 24$$

2) $(5v+2)(v^2-3v+8)$

3) $(2m-4)(4m^2-8m+5)$

4) $(6n-4)(3n^2+5n+2)$

Remainder Theorem: Evaluate each function at the given value. Yes/ No, is it a root? $= 0, \text{yes}$
 $\neq 0, \text{no}$

5) $f(m) = m^3 + m^2 - 8m - 20$ at $m = 3$

$$(3)^3 + (3)^2 - 8(3) - 20 = 0?$$

6) $f(a) = a^4 - 5a^3 - 3a^2 + 19a - 20$ at $a = 5$

Find all zeros. State whether it would bounce or pass at each zero(multiplicity).

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

8) $f(x) = (x-1)^2 \cdot (x+1)^2(x^2+1)$

9) $f(x) = (x+4)(x-2)(x+2)$

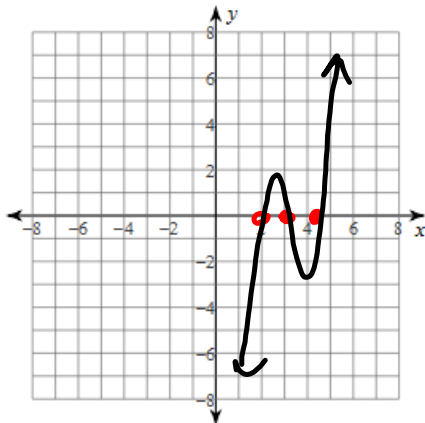
10) $f(x) = (x-1)(x+1)(x-2)(x+2)(x^2+4)$

$$x = 1, -1, 2, -2, \pm 2i$$

all pass / No touch.

Factor completely, then graph.

11)



$x^3 - 9x^2 + 26x - 24 = 0$; given root: 3

$$\begin{array}{r}
 x^3 - 9x^2 + 26x - 24 \\
 \underline{-(x^3 - 3x^2)} \quad \text{---} \\
 6x^2 + 26x - 24 \\
 \underline{-(6x^2 + 18x)} \quad \text{---} \\
 8x - 24 \\
 \underline{-(8x - 24)} \quad \text{---} \\
 0
 \end{array}$$

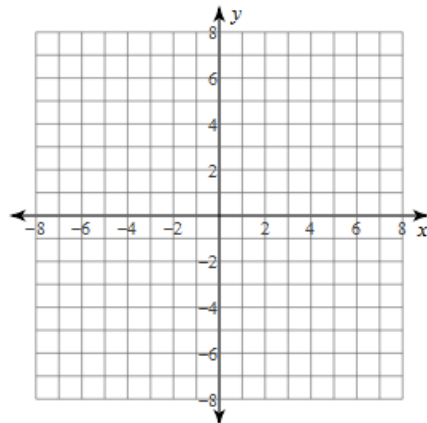
$$\begin{array}{r}
 (x-3) \overline{) x^2 - 6x + 8} \\
 \underline{-(x^2 - 3x)} \quad \text{---} \\
 3x + 8 \\
 \underline{-(3x - 6)} \quad \text{---} \\
 14
 \end{array}$$

$$\begin{array}{r}
 (x-3) \overline{) -4x + 8} \\
 \underline{-(-4x + 12)} \quad \text{---} \\
 -4
 \end{array}$$

$(x-3)(x-4)(x-2)$

$x = 3, 4, 2$ all pass

12)

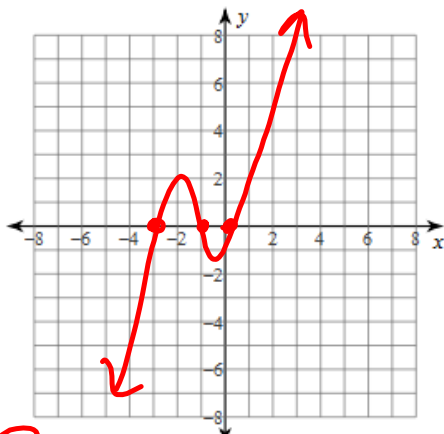


$x^3 - 5x^2 - 2x + 24 = 0$; given root: 3

$$\begin{array}{r}
 (x-3) \overline{) 8x - 24} \\
 \underline{-(8x - 24)} \quad \text{---} \\
 0
 \end{array}$$

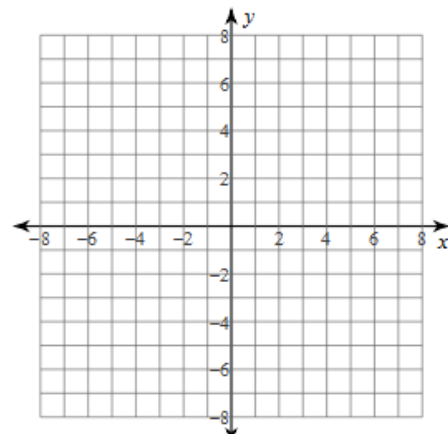
$$\begin{array}{r}
 (x-3) \overline{) -4x + 8} \\
 \underline{-(-4x + 12)} \quad \text{---} \\
 -4
 \end{array}$$

13)



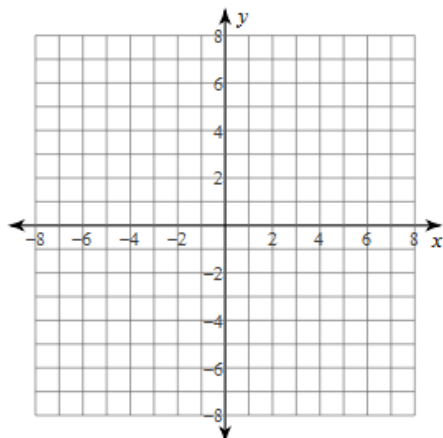
$x^3 - 4x^2 - 3x = 0$; given root: $-3 \rightarrow (x+3)$
 $x+3 \overline{) x^3 + 4x^2 + 3x + 0}$
 $\underline{-(x^3 - 3x^2)}$
 $7x^2 + 3x + 0$
 $\underline{-(7x^2 + 21x)}$
 $-18x + 0$
 $\underline{-(-18x + 54)}$
 $-54 + 0$
 -54
 $x^2 + x$
 $x(x+1)(x+3)$
 $\boxed{0, -1, -3}$ pass

14)



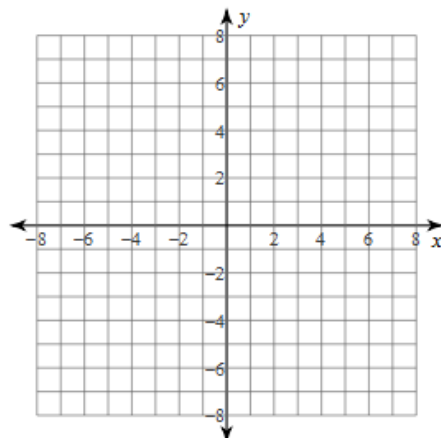
$x^3 + 3x^2 - 4x - 12 = 0$; given root: 2

15)



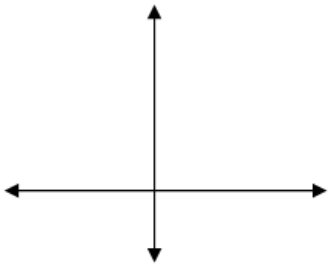
$$x^3 + 14x^2 + 65x + 100 = 0; \text{ given root: } -5$$

16)



$$x^3 - 6x^2 + 5x + 12 = 0; \text{ given root: } 3$$

17) $f(x) = (x+1)(x-2)$



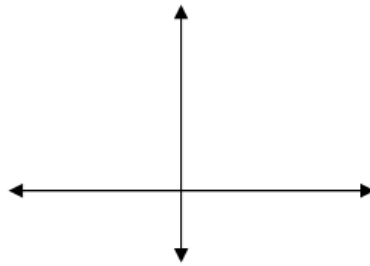
Leading term _____

End Behavior: _____

Zeros: _____

mult: _____

18) $g(x) = -(x+3)(x+2)(x-1)$

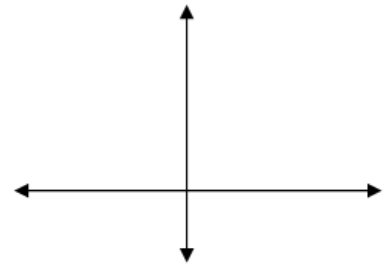
Leading term _____

End Behavior: _____

Zeros: _____

mult: _____

19) $h(x) = -x(x-2)(x+4)(x+1)$



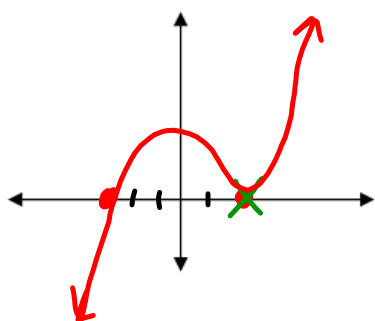
Leading term _____

End Behavior: _____

Zeros: _____

mult: _____

20) $p(x) = (x-2)^2(x+3)$



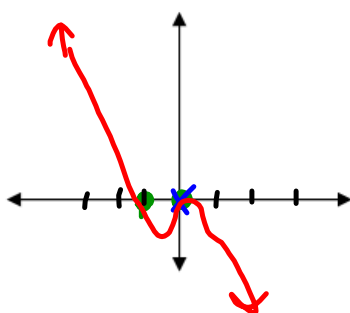
Leading term x^3

End Behavior:

Zeros: $2, -3$

mult: bounce, pass

21) $j(x) = -3(x+1)^3 x^2 = 0$



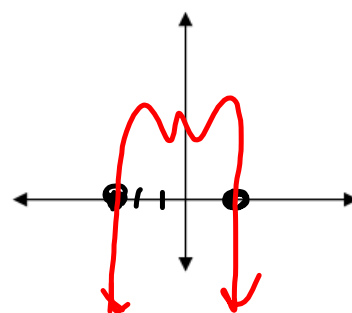
Leading term $-3x^5$

End Behavior:
(Shape) $\rightarrow -\infty$

Zeros: $-1, 0$

mult: 3, pass 2, bounce
exponent

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



Leading term $-x^6$

End Behavior:

Zeros: $-3, 1$

mult: all pass