Yesterday's **NEW** Work

pp. 184-185 #13 to 18 15b

\+ **p. 186** **Chapter Self-Test** (60 minutes)

Questions 2 and 9: would be worth several marks each on a test.

Questions 4 and 6: an explanation is required as well.

Question #3a has an incorrect answer. It should be: $(x-9)(x+8)(2x+1)$

p. 185

15. Factor fully.

a) $8x^3 - 10x^2 - 17x + 10$

b) $2x^3 + 7x^2 - 7x - 30$

$f(x) = 2x^3 + 7x^2 - 7x - 30$

$f(2) = 2(2)^3 + 7(2)^2 - 7(2) - 30$

$= 16 + 28 - 14 - 30$

$= 0$

2	2	7	-7	-30
	↓	4	22	30
	2	11	15	0 R.

$f(x)$

$= (x-2)(2x^2 + 11x + 15)$

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

p. 185 **18.** **a)** Factor the expression $x^6 - y^6$ completely by treating it as a difference of squares.

b) Factor the same expression by treating it as a difference of cubes.

a) $x^6 - y^6$

$= (x^3 - y^3)(x^3 + y^3)$

$= (x-y)(x^2+xy+y^2)(x+y)(x^2-xy+y^2)$

$\{ x^2 - 9$

$= (x-3)(x+3)$

b) $x^6 - y^6$

$= (x^2)^3 - (y^2)^3$

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

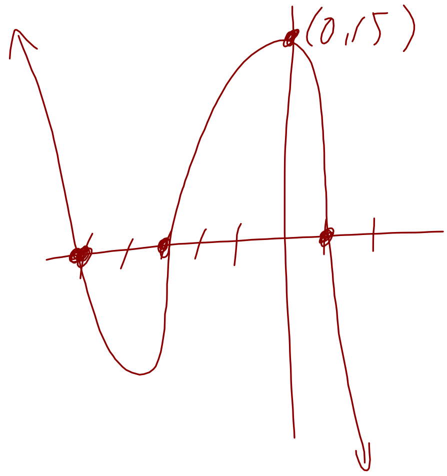
$= (x-y)(x+y)(x^4 + x^2y^2 + y^4)$

p. 186 **5.** During which intervals of x is the graph of the function $f(x) = -(x+3)(x+5)(x-1)$ below the x-axis?

Zeros: $-3, -5, 1$

Order: $1, 1, 1$

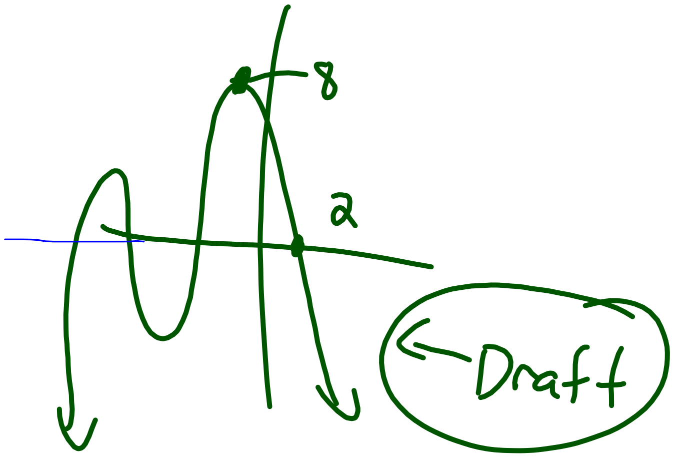
$f(0) = -(3)(5)(-1)$
$= 15$



$(-5,-3) \cup (1,\infty)$

p. 186 **9.** The function $f(x) = ax^4 + 8x^2$ has three turning points, an absolute maximum of 8, and one of its zeros at $x = 2$. Determine the value of a and the location of the other zeros. Then sketch the graph of $f(x)$.

$f(x) = (x-2)(g(x))$



$f(x) = ax^4 + 8x^2$

$f(2) = a(2)^4 + 8(2)^2$

$0 = 16a + 32$

$-16a = 32$

$a = -2$

$\therefore f(x) = -2x^4 + 8x^2$

$= -2x^2(x^2 - 4)$

$= -2x^2(x-2)(x+2)$

2	-2	0	8	0	0
	↓	-4	-8	0	0
	-2	-4	0	0	0

$\therefore f(x) = (x-2)(-2x^3 - 4x^2)$ R

$= (x-2)(-2x^2)(x+2)$

Zeros: 0, 2, -2

order: 2 1 1