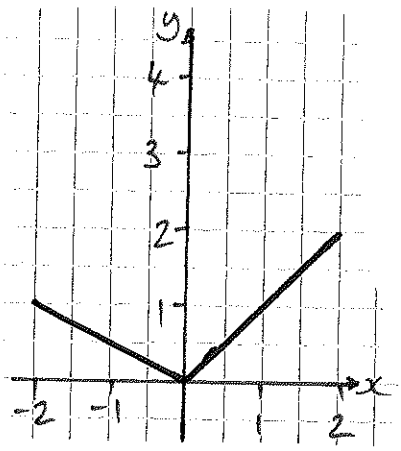
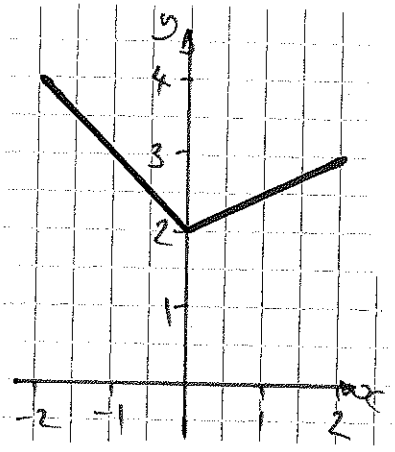
C1 Jan 2012

1) $8 + 3\sqrt{3}$

2i)



ii)



3) $p = -10 \quad r = -13$

4i) $\frac{1}{9}$ ii) 8 iii) 5

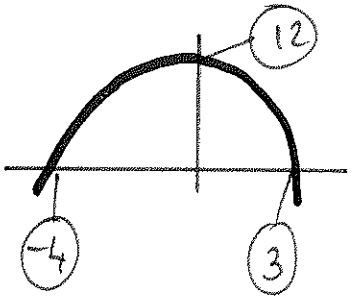
5) $y = \pm \frac{1}{2}$

6i) $f'(x) = -4x^{-2} - 3$ ii) $f''(\frac{1}{2}) = 64$

7i) (1, 9) ii) -11 iii) Explain

8) (-3, 17) (9, -7)

9i)



ii) $-4 < x < 3$

iii) (4, -9) (-2, 10)

10i) $x^2 + y^2 + 4x - 8y - 5 = 0$ ii) Show

iii) Verify iv) 25