Y11 Harder Graphs Practice #2
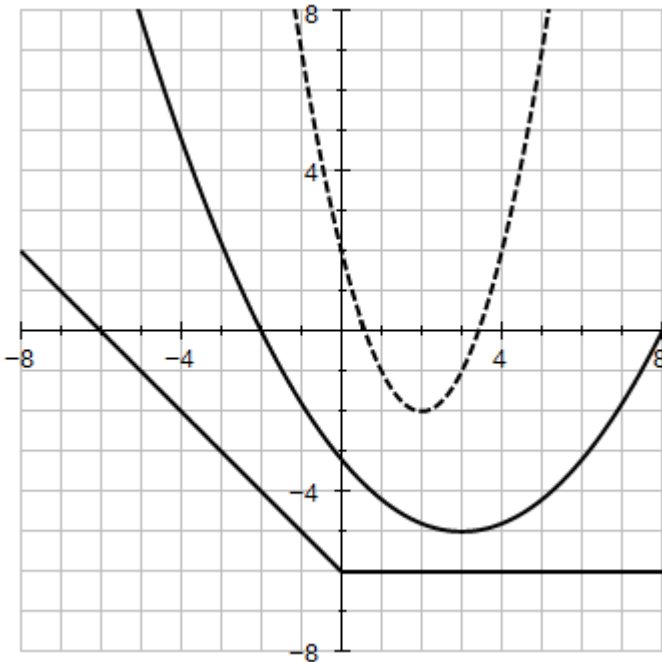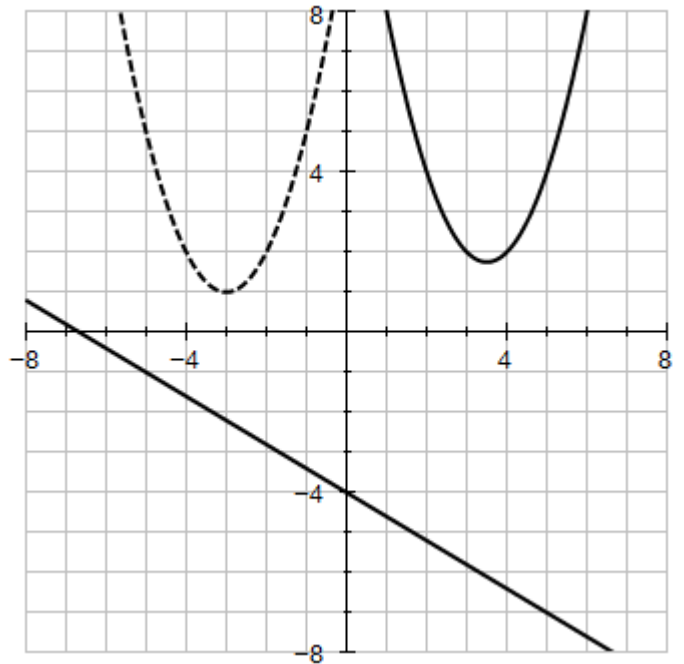
1.   For the grid to the right:

a.   What is the equation of the line?

b.   What is the equation of the dotted curve?

c.   What is the equation of the solid curve?

d.   Give the point where the parabolas cross.
     Show working.

2.   For the grid to the left:

a.   Write the equation for the lines.

b.   Write the equation of the solid curve.

c.   Write the equation of the dotted curve.

d.   At what height is the dotted parabola
     11 units wide?

3.   For the grid to the right:

a.   What are the intercepts of the line?
     Give full reasons.

b.   What is the equation of the parabola?

c.   What is the equation of the parabola if
     shifted by vector $\begin{pmatrix} -2 \\ 3 \end{pmatrix}$?

d.   What is the equation of the dotted curve?
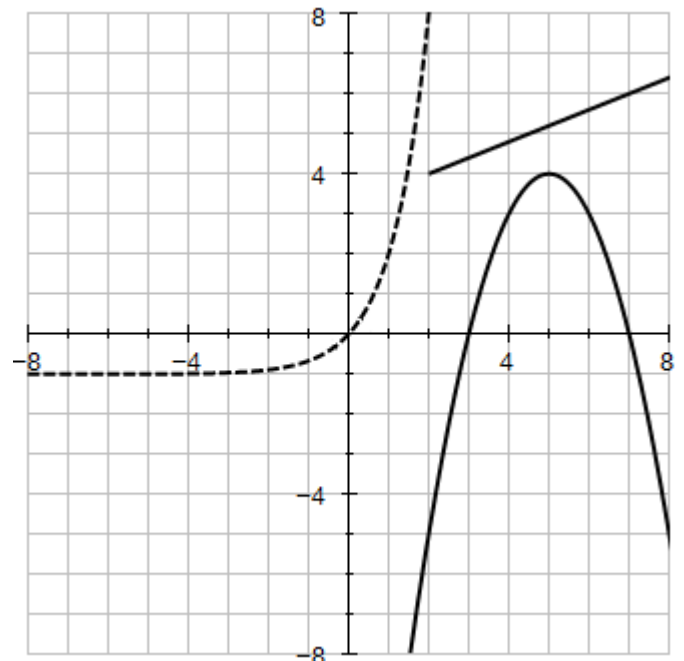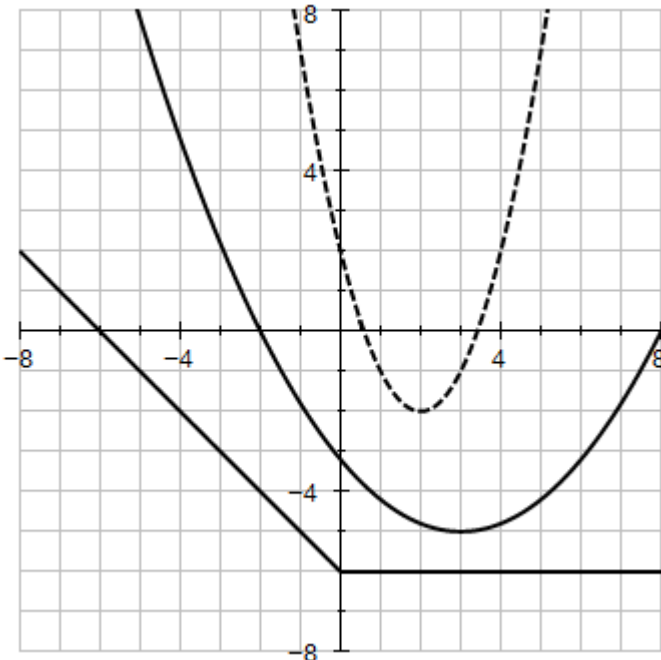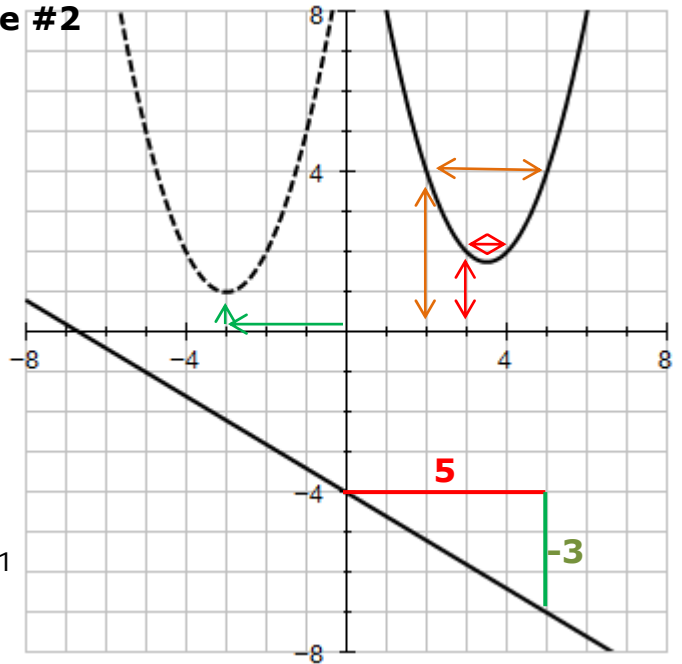
Answers: Y11 Harder Graphs Practice #2

1.

a. $y = \frac{-3}{5}x - 4$

b. $y = (x + 3)^2 + 1$

c. $y = (x - 3)(x - 4) + 2$ ◇

    or $y = (x - 2)(x - 5) + 4$ ⬌

d. $y = (x + 3)^2 + 1 = (x - 3)(x - 4) + 2$

    $\Rightarrow x^2 + 6x + 10 = x^2 - 7x + 14$

    $\Rightarrow x = \frac{4}{13}$ which we put into $y = (x + 3)^2 + 1$

    $\Rightarrow$ **(0.3077, 11.94)**

2.

a. $y = {}^{-}x - 6$ for $x \le 0$

    $y = {}^{-}6$ for $x > 0$

b. $y = \frac{1}{5}(x - 3)^2 - 5$

    or $y = \frac{1}{5}(x - 8)(x + 2)$

c. $y = (x - 2)^2 - 2$

    or $y = x(x - 4) + 2$ etc

d. 11 wide at ± 5.5 from centre $x = 2$

    put in $x = 7.5$ into formula to get y

    $y = (7.5 - 2)^2 - 2 =$ **28.25**

3.

a. Line is $y = 0.4x + c$ and has (7, 6)

    so $6 = 0.4 \times 7 + c \Rightarrow c = 3.2$

    Put x and $y = 0$, get **(0, 3.2) and ($^{-}$8, 0)**

b. $y = {}^{-}(x - 5) + 4$ or $y = {}^{-}(x - 3)(x - 7)$

c. $\binom{-2}{3}$ = two left and three up.

    -2 to x's, $+3$ to y's $\Rightarrow y = {}^{-}(x - 3)^2 + 7$,

    $y = {}^{-}(x - 1)(x - 5) + 3$ or $y = {}^{-}x^2 + 6x - 2$

d. triples for every $+1x$ from base of $y = {}^{-}1$

    $\Rightarrow y = 3^x - 1$