



Solve the simultaneous equations

$$2y - x + 3 = 0 \quad 2y + 3 = x$$

$$x^2 + xy = 0 \quad (2y+3)(2y+3) + y(2y+3) = 0$$

$$4y^2 + 12y + 9 + 2y^2 + 6y = 0$$

$$6y^2 + 18y + 9 = 0$$

$$2y^2 + 5y + 3 = 0$$

$$(2y+3)(y+1) = 0$$

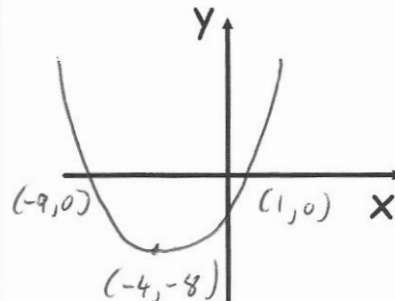
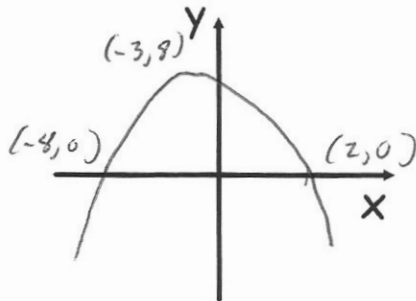
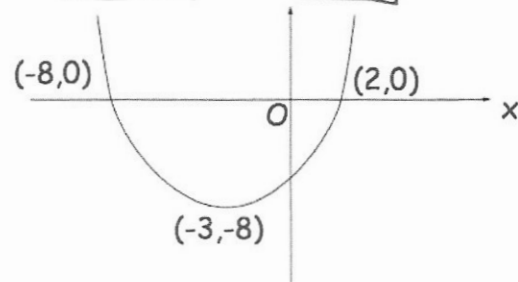
$$\boxed{y = -\frac{3}{2}} \text{ or } \boxed{y = -1}$$

$$\boxed{x = 0} \quad \boxed{y = 1}$$

Shown is a sketch of the graph $y = f(x)$.

- (a) Sketch $-f(x)$
 (b) Sketch $f(x+1)$

Label known coordinates



The line l_1 has equation $y = 4x - 10$
 The line l_2 has equation $x + y = 20$

The lines l_1 and l_2 intersect at the point C.

The lines l_1 and l_2 cross the line $y = 2$ at the points A and B.

Find the area of triangle ABC.

$$A : (3, 2) \quad B : (18, 2)$$

$$C : (6, 14)$$

$$\text{Area} = \frac{1}{2} \times 15 \times 12 = 90 \text{ units squared}$$

A circle has equation $x^2 + y^2 = 400$ Centre $(0, 0)$

$$r = 20$$

Find the equation of the tangent to the circle at the point $(16, -12)$

$$\text{gradient of radius} = -\frac{3}{4}$$

$$\text{gradient of tangent} = \frac{4}{3}$$

$$y = \frac{4}{3}x + c$$

$$-12 = \frac{64}{3} + c$$

$$-\frac{100}{3} = c$$

$$y = \frac{4}{3}x - \frac{100}{3}$$