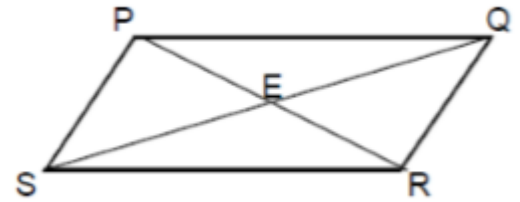


Q1. Find the equation of the tangent to the curve  $y = -3x^2 + 4$  at the point where  $x = -1$

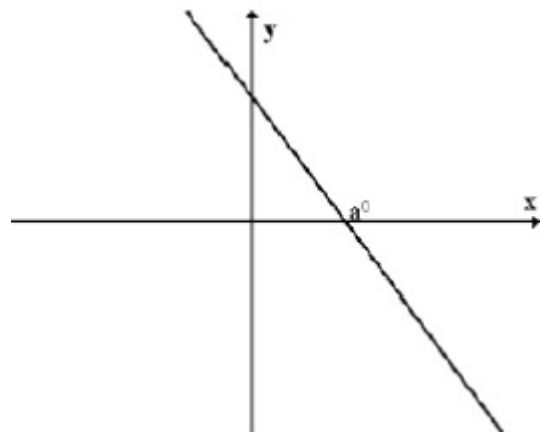
Q2. Given the function  $f(x) = \sqrt{x}(3x - \frac{4}{x\sqrt{x}})$ , find  $f'(x)$

Q3. PQRS is a parallelogram whose diagonals meet at E. P is the point  $(-2, 2)$  Q $(0, 8)$  and E $(2, 4)$ . Find the equation of the line RS



Q4. The diagram shows part of the line  $\sqrt{3}y = -3x + 6$

State the value of angle  $a^\circ$



Q5. The first three terms of the recurrence relation  $u_{n+1} = pu_n + q$  are 14, 12 and 10 respectively. Calculate the values of  $p$  and  $q$

Q6. A circle has the equation  $x^2 + y^2 - 4x - 8y - 5 = 0$ . Write down the tangent to the circle at the point  $(-3, 4)$

Q7. The height of a ball projected upwards is calculated using the formula  $h(t) = 30t - t^2$  where  $t$  is the time in seconds after been projected

- (i) Calculate the height of the ball after 10 seconds
- (ii) Calculate the velocity of the ball after 12 seconds