SUMMARY OF CALCULUS 2.

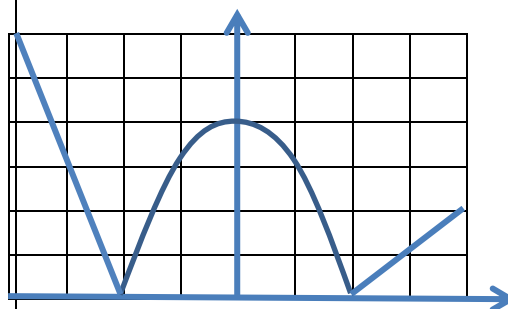1. Find the gradient of $y = 5 + 7x + x^4$ when $x = 1$

2. State whether the graph of $y = x^3 - 12x^2 + 36x$ is increasing, decreasing or stationary when
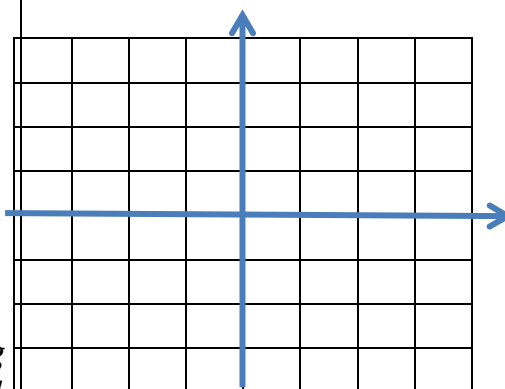(a) $x = 4$

(b) $x = 2$

(c) $x = 7$

3. Find the x coordinates of the turning points (ie max/ min points) of the graph $y = x^2(x - 4)^2$

4. Consider this piecewise graph:

Draw the gradient function:

5. If $y' = -2x + 5$ find the equation for y if the curve goes through (1, 7)

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

7. The distance, x of an object from O at t secs is given by :

$x = t^2 - 2t + 4$

(a) how far from O is it at t = 0 sec?

(b) how far from O is it at t = 5 sec?

(c) find the velocity equation

$v = \dfrac{dx}{dt} =$

(d) find the velocity at t = 0 sec

(e) find the velocity at t = 5 sec

(f) find the acceleration equation

$a = \dfrac{dv}{dt} =$

8. A gun is fired so that the bullet goes vertically upwards.
The height of the bullet at t sec is
$H = 80t - 5t^2 + 2$

(a) how high was the gun as the bullet was fired?

(b) find the velocity equation.

(c) find the time when the velocity of the bullet was zero.

(d) find the greatest high reached by the bullet.

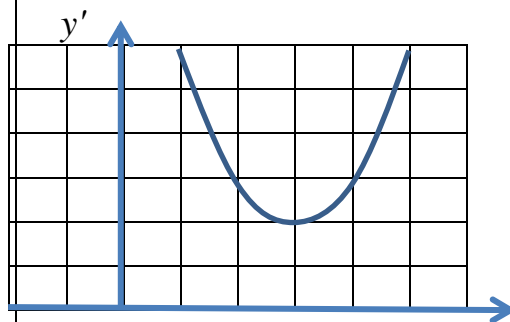(e) what was the initial velocity of the bullet?

(f) how far did the bullet travel in the 4th second? (from t = 3 to t = 4) .

9. The velocity of an object is given by
$v = 4t^3 - 8t$ m/s
Find the distance equation given that at t = 2 sec the distance x = 10 m

10. This is the gradient graph of a function y = f(x)

Draw the function: