

Name: _____



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Find the co-ordinate(s) of the turning point(s):

a) $y = x^2 + 8x - 2$

e) $y = 3x^2 + 12x - 12$

b) $y = x^2 - 12x + 6$

f) $y = 4x^2 - 16x - 2$

c) $y = 2x^2 - 16x$

g) $y = 32x - 2 - 4x^2$

d) $y = x^3 + x^2 - 8x - 1$

h) $y = x^3 - 2x^2 - 7x - 5$

Find the co-ordinate of the turning point and determine its nature:

a) $y = x^2 + 4x + 3$

d) $y = 5x^2 - 20x - 3$

b) $y = x^2 - 6x + 2$

e) $y = 4 - 16x - 4x^2$

c) $y = -x^2 - 6x + 1$

f) $y = 12x + 5 - 2x^2$

 **Exam question:**

Find the co-ordinates of the turning points and determine their nature:

$$y = x^3 - 12x^2 - 1$$



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For each question: i) Find an expression for the velocity ii) Find an expression for the acceleration

a) $s = 2t^3 + 6t + 4$ i)

ii)

iii) Find the acceleration when $t = 3$

b) $s = t^3 + 5t^2 - 4$ i)

ii)

iii) Find the velocity when $t = 4$

c) $s = 6 + 3t^2 + 2t^3$ i)

ii)

iii) Find the acceleration when $t = 4$

d) $s = 5t^3 + 4t^2 - 2t$ i)

ii)

iii) Find the initial acceleration when $t = 0$

e) $s = 8t^2 - 6t - 1$ i)

ii)

iii) Find time when the velocity is 106ms^{-1}

f) $s = 4t^3 - 5t^2 + 6t$ i)

ii)

iii) Find the time when $a = 14\text{ms}^{-2}$

Exam question:

A particle P is moving along a straight line.
At time t seconds, the displacement of P is s metres where $s = t^3 - 6t^2 - 63t - 4$
Find the minimum velocity of P.

