

Name: _____



maths-school.co.uk

Differentiate:

a) $y = x^3$

e) $y = 6x^2$

i) $y = 2x^{-3}$

b) $y = x^6$

f) $y = 14x^3$

j) $y = 4x^{-7}$

c) $y = x^{10}$

g) $y = 2x^3$

k) $y = -7x^3$

d) $y = x^8$

h) $y = -2x^6$

l) $y = -4x^{-2}$

Differentiate:

a) $y = x^5 + 3x^2 + 6$

b) $y = x^6 + 11x^2 + 2x$

c) $y = 3x^4 - 2x^2 + 5x$

d) $y = 5x^6 - 3x^4 - 3x^2$

e) $y = x^{-3} + 7x^{-2} - 3x$

f) $y = x^4 - 2x^{-2} + 6$

g) $y = \frac{1}{2}x^3 + 4x^3 + 8$

h) $y = \frac{3}{2}x^8 + 4x^{-1} + 7x$

Find the gradient of the curve:

a) $y = x^2 + 3x + 7$ when $x = 3$

b) $y = x^2 - 4x + 2$ when $x = 2$

c) $y = 3x^2 + 6x + 4$ when $x = 5$

d) $y = 2x^3 + 5x^2 - 2x$ when $x = 1$

e) $y = 7x^3 - 4x$ when $x = -1$

f) $y = 5x^2 - 2x - 7$ when $x = -2$

Exam question:

$y = x^3 - 7x + 3$

Find the gradient of the curve at the point where the curve intersects the y-axis.



Name: _____



maths-school.co.uk

Find the gradient of the curve:

a) $y = x^2 + 4x + 1$ at $(1, 6)$

d) $y = x^3 + x^2 + 3x$ at $(2, 18)$

b) $y = x^2 - 2x$ at $(3, 3)$

e) $y = 3x^3 + x^2 - 5x + 1$ at $(1, -1)$

c) $y = 3x^2 + 2x + 4$ at $(2, 20)$

f) $y = 36x^{-1} + 4x - 4$ at $(3, 20)$

Find the co-ordinate(s) of the point(s) on the curve:

a) $y = x^2$, when gradient = 10

e) $y = 4x^2 - 5x - 1$, when gradient = 43

b) $y = x^2 + 4x - 5$, when gradient = 14

f) $y = 2x^3 - 4x$, when gradient = 20

c) $y = x^2 - 2x + 1$, when gradient = 10

g) $y = 5x - x^2$, when gradient = 11

d) $y = 3x^2 + 8x + 1$, when gradient = 32

h) $y = 4 - 2x - 3x^2$, when gradient = -8

**Exam question:**

$y = 3x^2 - 4x + 5$

Find the co-ordinates of the point on the curve where the gradient of the curve is -2.

