

A2 Maths Test δ (epsilon) version O

1) Differentiate $\cos^5 x$ with respect to x :

2) Integrate $2(3x - 3)^4$ with respect to x :

3) $f(x) = (x - 1)^2 + 3$

Sketch

- a) $f(x)$,
- b) $f(|x|)$
- c) $|f(x)|$

4) The functions f , g and h each have the set of real numbers as their domain and are defined as follows:

$$f(x) = 7 - 2x$$

$$g(x) = 4x - 1$$

$$h(x) = 3(x - 1)$$

Find $fg(x)$, $gh(x)$ and $ff(x)$ and hence find the values of x for which:

(a) $fg(x) = -15$

(b) $gh(x) = 11$

(c) $ff(x) = 102$

A2 Maths Test δ (epsilon) version P

1) Differentiate $\cos^4 x$ with respect to x :

2) Integrate $(2x - 4)^3$ with respect to x :

3) $f(x) = (x + 1)^2 - 2$

Sketch

- a) $f(x)$,
- b) $f(|x|)$
- c) $|f(x)|$

4) The functions f , g and h each have the set of real numbers as their domain and are defined as follows:

$$f(x) = 5 - 3x$$

$$g(x) = 3x - 1$$

$$h(x) = 2(x - 1)$$

Find $fg(x)$, $gh(x)$ and $ff(x)$ and hence find the values of x for which:

(a) $fg(x) = -1$

(b) $gh(x) = 11$

(c) $ff(x) = 17$

A2 Maths Test δ (epsilon) version Q

1) Differentiate $\cos^2 x$ with respect to x :

2) Integrate $(2x - 4)^5$ with respect to x :

3)) $f(x) = (x - 2)^2 - 3$

Sketch

d) $f(x)$,

e) $f(|x|)$

f) $|f(x)|$

4) The functions f , g and h each have the set of real numbers as their domain and are defined as follows:

$$f(x) = 2 - 7x$$

$$g(x) = 4x - 1$$

$$h(x) = 3(x - 2)$$

Find $fg(x)$, $gh(x)$ and $ff(x)$ and hence find the values of x for which:

(a) $fg(x) = 37$

(b) $gh(x) = -13$

(c) $ff(x) = 135$

A2 Maths Test δ (epsilon) version R

1) Differentiate $\cos^{411} x$ with respect to x :

2) Integrate $(2x + 1)^3$ with respect to x :

3)) $f(x) = (2 - x)^2 - 2$

Sketch

a) $f(x)$,

b) $f(|x|)$

c) $|f(x)|$

4) The functions f , g and h each have the set of real numbers as their domain and are defined as follows:

$$f(x) = x^2$$

$$g(x) = 4x - 1$$

$$h(x) = 3(x - 1)$$

Find $fg(x)$, $gh(x)$ and $ff(x)$ and hence find the values of x for which:

(a) $fg(x) = 0$

(b) $gh(x) = 11$

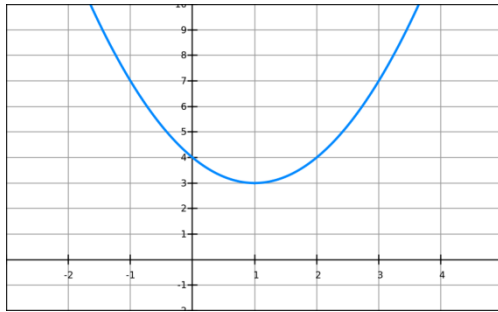
(c) $ff(x) = 81$

Answers O

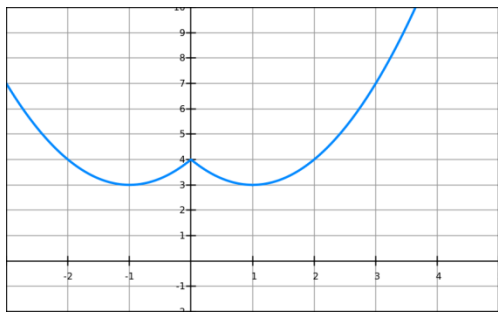
1) $-5\cos^4 x \sin x$

2) $\frac{2}{15}(3x-3)^5 + c$

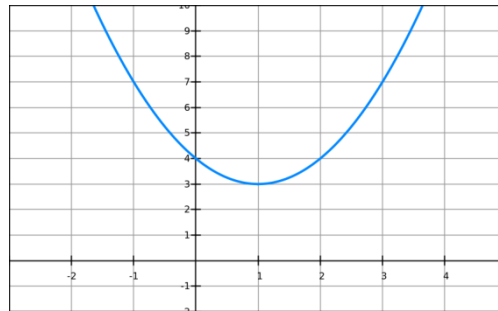
3) a)



b)



c)



4a) $fg(x) = 9 - 8x, x = 3$

b) $gh(x) = 12x - 13, x = 2$

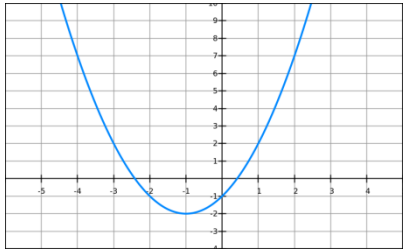
c) $ff(x) = 4x - 7, x = \frac{109}{4}$

Answers P

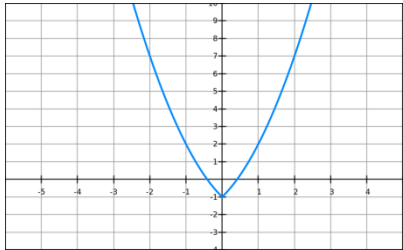
1) $-4 \cos^3 x \sin x$

2) $\frac{1}{8}(2x - 4)^4$

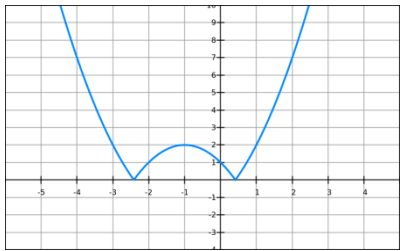
3) a)



b)



c)



4a) $fg(x) = 8 - 9x, x = 1$

b) $gh(x) = 6x - 7, x = 3$

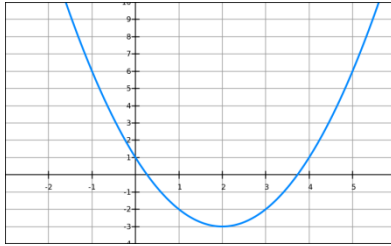
c) $ff(x) = 9x - 10, x = 3$

Answers Q

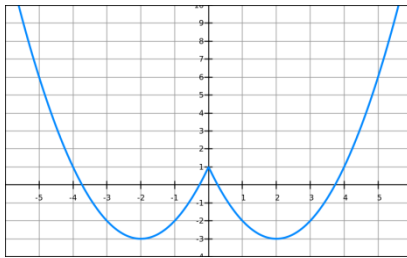
1) $-2 \cos x \sin x$

2) $\frac{1}{12}(2x - 4)^6$

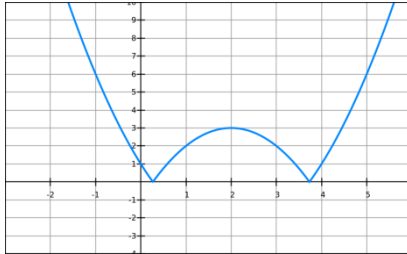
3)a)



b)



c)



4a) $fg(x) = 9 - 28x$, $x = -1$

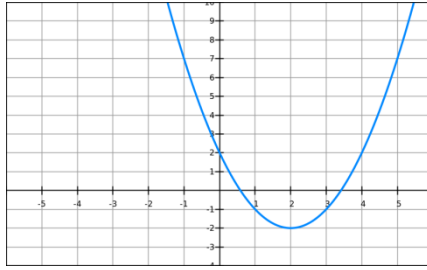
b) $gh(x) = 12x - 25$, $x = 1$

c) $ff(x) = 49x - 12$, $x = 3$

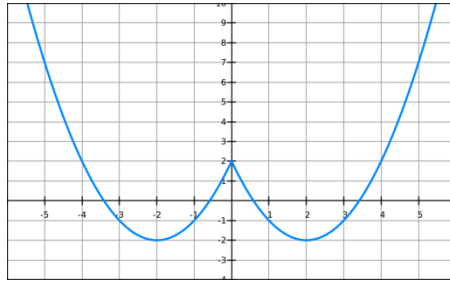
Answers R

- 1) $-411 \cos^{410} x \sin x$
- 2) $\frac{1}{8}(2x + 1)^4$

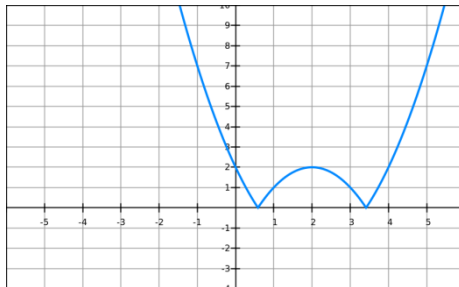
3) a)



b)



c)



- 4a) $fg(x) = (4x - 1)^2 (= 16x^2 - 8x + 1), x = \frac{1}{4}$
- b) $gh(x) = 12x - 13, x = 2$
- c) $ff(x) = x^4, x = 3, -3$