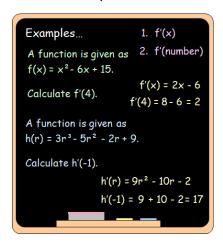
Outcome 1 - Finding the derivative at a particular point

Bronze examples



Bronze questions

For the functions below, calculate the following...

f'(6)

$$f(x) = 5x^2 + 2x - 8$$

$$g(x) = 3x^2 - 17x$$
 $g'(1)$

$$h(r) = 7r^3 - 20$$
 $h'(-2)$

$$v(r) = 4r^2 + 11$$
 $v'(3)$

$$A(x) = x^2 - 5x + 8$$
 $A'(10)$

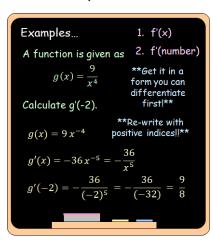
$$C(p) = p^3 + 9p - 2$$
 $C'(-4)$

$$v(t) = 5t^3 + 3t^2 - t$$
 $v'(2)$

$$f(x) = x^3 + x^2 - 6x + 10 \qquad f'(\frac{1}{2})$$

Outcome 2 - Harder substitution!

Silver example



Silver questions

For the functions below, calculate...



$$h(x) = \frac{7}{x}$$
 Calculate h'(3)

$$g(x) = \frac{3}{2x^2}$$
 Calculate g'(-4)

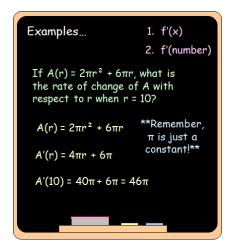
$$p(t) = \frac{1}{3t^{\frac{1}{2}}}$$
 Calculate p'(9)

$$A(t) = \frac{9}{\sqrt[3]{x}}$$
 Calculate A'(8)

$$f(x) = \frac{x^2 + 2}{\sqrt{x}}$$
 Calculate f'(4)

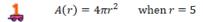
Outcome 3 - Rates of change

Gold example



Gold questions

Find the rate of change of ...



$$A(r) = \pi r^2 \quad \text{when } r = 3$$

$$A(r) = 2\pi r^2 + 10\pi r$$
 when $r = 4$

$$v(r) = \frac{4}{3}\pi r^3 \quad \text{when } r = 7$$

$$v(r) = 5\pi r^3 + 3\pi r$$
 when $r = 2$

$$v(r) = 6\pi r^3 + 2\pi r^2$$
 when $r = 40$

Bronze Answers

4.
$$v'(3) = 24$$

5.
$$A'(10) = 15$$

5.
$$A'(10) = 15$$
 6. $C'(-4) = 57$

7.
$$\sqrt{(2)} = 71$$

7.
$$v'(2) = 71$$
 8. $f'(1/2) = -17/4$

Silver Answers

1.
$$f'(2) = -9/4$$

1.
$$f'(2) = -9/4$$
 2. $h'(3) = -7/9$

3.
$$g'(-4) = 3/64$$

3.
$$g'(-4) = 3/64$$
 4. $p'(9) = -1/162$

5.
$$A'(8) = -3/16$$
 6. $f'(4) = 159/8$

Gold Answers

1.
$$A'(5) = 40\pi$$
 2. $A'(3) = 6\pi$

2.
$$A'(3) = 6\pi$$

3.
$$A'(4) = 26\pi$$

3.
$$A'(4) = 26\pi$$
 4. $V'(7) = 196\pi$

5.
$$\sqrt{(2)} = 63\pi$$

5.
$$\sqrt{(2)} = 63\pi$$
 6. $\sqrt{(40)} = 28960\pi$