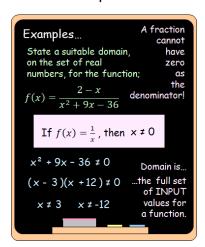
Outcome 1 - Restrictions on the domain (for fractions)

Bronze example



Bronze questions

State a suitable domain, on the set of real numbers, for the following functions;



$$f(x) = \frac{11}{x} \qquad \qquad \mathbf{g}(x) = \frac{8x}{x+1}$$

$$k(x) = \frac{x+9}{5x-1}$$

$$f(x) = \frac{4x+1}{x^2+8x+15}$$

$$h(x) = \frac{x+4}{x^2-4x-21} \qquad \qquad \text{(a)} \qquad g(x) = \frac{12}{49x^2-64}$$

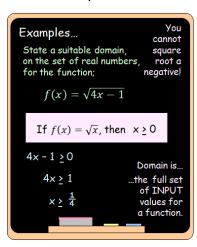
$$g(x) = \frac{12}{49x^2 - 64}$$

$$k(x) = \frac{7-x}{3x^2 - 5x - 2}$$
 $f(x) = \frac{x-4}{x^5 + x^4}$

$$f(x) = \frac{x-4}{x^5 + x^4}$$

Outcome 2 - Restrictions on the domain (for square roots)

Silver example



Silver questions

State a suitable domain, on the set of real numbers, for the following functions;



$$f(x) = \sqrt{x + 10}$$





$$k(x) = \sqrt{5x - 2}$$



$$k(x) = \sqrt{5x - 2} \qquad \qquad \mathbf{4} \qquad f(x) = \sqrt{7x + 1}$$



$$h(x) = \frac{6 - x}{\sqrt{x}}$$



$$h(x) = \frac{6-x}{\sqrt{x}}$$
 $g(x) = \frac{8}{\sqrt{2x+3}}$

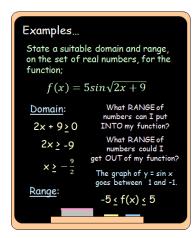


$$k(x) = \frac{5+x}{\sqrt{x^2+9x+20}}$$

**Notice that qu's $k(x) = \frac{5+x}{\sqrt{x^2+9x+20}}$ **Notice that qu's
5-6 have a square root
AND a fraction | ** AND a fraction **

Outcome 3 - Domain and range of trigonometric functions

Gold example



Gold questions

State a suitable domain and range, on the set of real numbers, for the following functions;





$$g(x) = 9\cos\sqrt{x} + 3$$







$$k(x) = 1 + 6\sin\sqrt{3x + 1}$$



$$g(x) = \cos^2 \sqrt{8x + 5}$$

Bronze Answers

- 1. x≠0 2. x≠-1
- 3. x ≠ 1/5 4. x ≠ -3, -5
- 5. $x \neq 7, -3$ 6. $x \neq 8/7, -8/7$
- 7. $x \neq -1/3, 2$ 8. $x \neq 0, -1$

Silver Answers

- 1. x≥-10 2. x≥15
- 3. x ≥ 2/5
 4. x ≥ -1/7
- 5. x > 0 6. x > -3/2
- 7. x < -5, x > -4

Gold Answers

- 1. Domain; $x \ge 1$ Range; $-1 \le f(x) \le 1$
- 2. Domain; $x \ge -3$ Range; $-9 \le g(x) \le 9$
- 3. Domain; $x \ge 2/9$ Range; $-4 \le h(x) \le 4$
- 4. Domain; $x \ge -1/3$ Range; $-5 \le k(x) \le 7$
- 5. Domain; $x \ge -5/8$ Range; $0 \le g(x) \le 1$