

f r q

**Part A**

20.

The functions  $g$  and  $h$  are given by

$$g(x) = 15 \arcsin x$$

$$h(x) = \log_{10}(1 - x) - \log_{10} 4.$$

(i) Solve  $g(x) = 5\pi$  for values of  $x$  in the domain of  $g$ .

(ii) Solve  $h(x) = 1$  for values of  $x$  in the domain of  $h$ .

**Part B**

The functions  $j$  and  $k$  are given by

$$j(x) = \log_2(x + 4) - 11 \log_2(x - 2) + \log_2(x^3)$$

$$k(x) = (\cot x)(\csc x).$$

(i) Rewrite  $j(x)$  as a single logarithm base 2 without negative exponents in any part of the expression. Your result should be of the form  $\log_2(\text{expression})$ .

(ii) Rewrite  $k(x)$  as a fraction involving powers of  $\cos x$  and no other trigonometric functions.

**Part C**

The function  $m$  is given by

$$m(x) = (2^x)^2 - 3 \cdot 2^x.$$

Find all values in the domain of  $m$  that yield an output value of 18.

**Part A**

Select a point value to view scoring criteria, solutions, and/or examples to score the response.



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The student response includes both of these criteria.

- Solution to  $g(x) = 5\pi$
- Solution to  $h(x) = 1$

**Model Solution**