Name:

Level 2 Further Maths

Increasing/Decreasing Functions

Ensure you have: Pencil or pen

Guidance

1. Read each question carefully before you begin answering it.
2. Check your answers seem right.
3. Always show your workings

Revision for this topic

www.corbettmaths.com/more/further-maths/
1. Shown below are three graphs.

Complete the following

<table>
<thead>
<tr>
<th>Increasing function</th>
<th>Decreasing function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graph 1</td>
<td>□</td>
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<tr>
<td>Graph 2</td>
<td>□</td>
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<tr>
<td>Graph 3</td>
<td>□</td>
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</tbody>
</table>

(1)

2. For what values of \( x \) is \( y = x^2 \) an increasing function?
3. Shown below is the graph of \( y = f(x) \)

The point (2, 18) is a maximum point and the point (7, 5) is a minimum point.

Write down the range of values of \( x \) for which \( f'(x) \) is an decreasing function.

\[ \text{\underline{\hspace{5cm}}} \]

(2)
4. Shown below is the graph of \( y = f(x) \)

The point \((-3, 2)\) is a minimum point and the point \((1, 6)\) is a maximum point.

Write down the range of values of \(x\) for which \(f'(x)\) is an increasing function.
5. For what values of x is $y = x^2 - 2x - 15$ an increasing function?

6. Find the range of values of x for which the function

$$f(x) = 3 + 10x - 8x^2$$

is decreasing.
7. Find the values of x for which \( y = 10 + 2x^2 - 4x^3 \) is a decreasing function.

8. Find the values of x for which \( y = 75x - 5x^3 \) is an increasing function
9. Given \( f(x) = 3x^3 - 9x^2 + 10x + 1 \)

Show \( f(x) \) is an increasing function for all values of \( x \)
10. Given \( f(x) = -x^3 + 3x^2 - 7x - 1 \)

Show \( f(x) \) is a decreasing function for all values of \( x \)