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Test

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Start time: 9:08

End time: 9:43

28.10.24

1. $f(z) = 2 \times 2^{17} + 5 \times 2^{10} - 7 \cdot 2^3 + 6$
 $= \underline{26,7214}$ ✓ 2/2

2. N/A Haven't done complex roots.

3. N/A 1 ——— " ——— 1

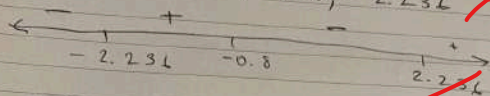
4. a) Roots: $(-2, 0), (2, 0), (3, 0)$ ✓
 $y = a(x+2)(x-2)(x-3)$
 $12 = a \times 2 \times -2 \times -3$ ✓ 3
 $12 = 12a$
 $a = 1$ ✓
Equation: $y = (x+2)(x-2)(x-3)$ ✓

b) Roots: $(-1, 0), (-1, 0), (4, 0)$ ✓
 $y = a(x+1)^2(x-4)$ ✓
 $8 = a \times 1 \times -4$ 3
 $8 = -4a$
 $a = -2$ ✓
Equation: $y = -2(x+1)^2(x-4)$ ✓ 6/6

5. a) $x^3 + x^2 - 12x - 18 \leq 0$ ✓
Roots: $3.6457, -1.645, -3$ ✓
 $\leftarrow \begin{array}{c} - \\ + \\ - \\ + \end{array} \begin{array}{c} \leftarrow \\ \leftarrow \\ \leftarrow \\ \leftarrow \end{array} \begin{array}{c} -3 \\ -1.645 \\ 3.6457 \end{array} \rightarrow$ ✓
 $x^3 + x^2 - 12x - 18 \leq 0$ as: $[-\infty, -3] \cup [-1.645, 3.6457]$ ✓ 5

b) $5x^3 + 4x^2 - 25x - 20 \geq 0$

Roots: 2.236, -0.8, -2.236



$5x^3 - 20 \geq 25x - 4x^2$ as: $[-2.236, -0.8] \cup [2.236, \infty)$

6. N/A Haven't done sin, cos etc

10/12

7. $f(x) = x^3$
 $(f \circ f)(x) = (x^3)^3$ (checking with example)
 $= x^9$

is $x^9 = -(-x)^9$ $f(x) = -f(-x)$

Let's take 1 as x .

$1^9 = -(-1)^9$

$1 = -(-1)$

$1 = 1$

So it will be odd

1/2

8. N/A

9. N/A

10.

a) V.A.: $\frac{x+1}{(x+2)(x-3)}$

Denominator is 0 when $x = -2$ and when $x = 3$

Vertical Asymptotes: $x = -2$
 $x = 3$

H.A.: $y = 0$ (x -axis)

b) $y = \frac{1}{-6}$ ← make $x = 0$

$y = -\frac{1}{6}$ ← y -intercept
 $(0, -\frac{1}{6})$

$0 = \frac{x+1}{x^2-x-6}$

$x+1 = 0$ ← x -intercept
 $x = -1$
 $(-1, 0)$

c) N/A

5/5