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Quiz 3

This quiz is graded out of 15 marks. No books, watches, notes or cell phones are allowed. You must show all your work, the correct answer is worth 1 mark the remaining marks are given for the work. If you need more space for your answer use the back of the page.

Question 1. Factor completely:

a. *(3 marks)* $2x^6 + 8x^5 - 42x^4$ $= 2x^4(x^2 + 4x - 21)$

$= 2x^4(x+7)(x-3)$

b. *(2 marks)* $64x^2 - 100$ $= (8x)^2 - 10^2$

$= (8x - 10)(8x + 10)$

Question 2. *(5 marks)* Add or subtract and simplify completely:

$$\frac{x^2 - 11}{x^2 + 7x + 6} - \frac{x}{x+6} + \frac{2}{x+1}$$

$LCD = (x+6)(x+1)$

$= \dfrac{x^2 - 11}{(x+6)(x+1)} - \dfrac{x}{(x+6)} \dfrac{(x+1)}{(x+1)} + \dfrac{2}{(x+1)} \cdot \dfrac{(x+6)}{(x+6)}$

$= \dfrac{x^2 - 11 - x(x+1) + 2(x+6)}{(x+6)(x+1)}$

$= \dfrac{x^2 - 11 - x^2 - x + 2x + 12}{(x+6)(x+1)}$

$= \dfrac{x+1}{(x+6)(x+1)}$

$= \dfrac{1}{x+6}$

Question 3. Simplify completely:

a. *(2 marks)* $4\sqrt{12} - \sqrt{27} + 2\sqrt{48}$ $= 4\sqrt{4 \cdot 3} - \sqrt{9 \cdot 3} + 2\sqrt{16 \cdot 3}$

$= 4\sqrt{4}\sqrt{3} - \sqrt{9}\sqrt{3} + 2\sqrt{16}\sqrt{3}$

$= 4 \cdot 2\sqrt{3} - 3\sqrt{3} + 2 \cdot 4\sqrt{3}$

$= 8\sqrt{3} - 3\sqrt{3} + 8\sqrt{3}$

$= 13\sqrt{3}$

b. *(3 marks)* $(\sqrt{5} - 2\sqrt{6})^2$

$= (\sqrt{5} - 2\sqrt{6})(\sqrt{5} - 2\sqrt{6})$

$= \sqrt{25} - 2\sqrt{30} - 2\sqrt{30} + 4\sqrt{36}$

$= 5 - 4\sqrt{30} + 4 \cdot 6$

$\rightarrow = 5 + 24 - 4\sqrt{30}$

$= 29 - 4\sqrt{30}$