

King Fahd University of Petroleum and Minerals
Prep-Year Math Program
Math (001)-Term (181)
Recitation P.6

Question 1: Factor the following expressions

(a) $\left(1 + \frac{1}{x}\right)^2 - \left(1 - \frac{1}{x}\right)^2$

(b) $y^3 - 1 - y^2 + y$

(c) $2(a+b)^2 - 5(a+b) - 3$

(d) $8r^3 - 64t^6$

(e) $\frac{1}{2}x^{-1/2}(3x+4)^{1/2} + \frac{3}{2}x^{1/2}(3x+4)^{-1/2}$

Answer:

(a): $\frac{4}{x}$

(b): $(y-1)(y^2+1)$

(c): $(2a+2b+1)(a+b-3)$

(d): $8(r-2t^2)(r^2+2rt^2+4t^4)$

(e): $\frac{(3x+2)\sqrt{x}\sqrt{3x+4}}{x(3x+4)}$

Question 2: One of the factors of $x^4 + x^2 - 2$ is

(a) $x - 1$

(b) $2x + 1$

(c) $2x^2 + 1$

(d) $x + \sqrt{2}$

(e) $x - \sqrt{2}$

Question 3: The possible value(s) of k that make(s) the trinomial

$36x^2 + kxy + 49y^2$ a perfect square is (are)

(a) 84

(b) -84

(c) ± 84

(d) ± 42

(e) -42

Answer: $k = \pm 84$

Question 4: One factor of $4x^2 - 8xy - 5y^2 - 4x + 10y$ is

(a) $2x + y - 2$

(b) $4x - 4y - 2$

(c) $2x + y$

(d) $2x - y + 2$

(e) $5x - 2y$

Answer: (a): $2x + y - 2$