King Fahd University of Petroleum & Minerals
Faculty of Science
Math P-Y Exam 3

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Name: ST.ID:

1) The expression $\dfrac{2i^9}{-1+i}$ is

a) $1+i$ b) $-1-i$ c) $1-i$ d) $-1+i$ e) $2-i$

2) The polynomial $p(x)=x^3-4x-4$ has a zero between:

a) –1 & 0 b) 0 & 1 c) 3 & 4 d) –3 & -2 e) 2 & 3

3) The domain of $p(x)=\sqrt{\dfrac{(3+x)(1-x)}{(1+x)}}$ in interval notation is: a) $(\infty, -3] \cup (-1,1]$

b) $[-3, -1) \cup [1, \infty)$ c) $[-3, -1) \cup (-1,1]$ d) $(\infty, -3] \cup [1, \infty)$ e) $(-\infty, -1) \cup [1, \infty)$

4) The graph of the function $f(x)=\dfrac{(x+1)(x^4+2)}{(x-2)(x^3+1)}$ has the following asymptotes:

a) 2 vertical & 1 slant b) 1 vertical, 1 horiz0ntal & 1 slant c) 1 vertical & 1 slant
d) 2 vertical & 1 horizontal e) 4 vertical & 1 slant

5) The slant asymptote of the graph of $f(x)=\dfrac{3x^3-x-10}{x^2-2x-3}$ is: a) $y=\dfrac{1}{3}x+4$

b) $y=3x-5$ c) $y=3x+5$ d) $y=3x+6$ e) $y=-3x+7$

6) The sum of the x-intercepts of the function $f(x) = 2x^5 - 23x^4 + 80x^3 - 58x^2 - 82x - 15$ is:

a) 7 b) 8 c) 8.5 d) 7.5 e) –7.5

7) The polynomial function with real coefficients with zeros: 3, -5, $2+i$ & $p(1) = 48$ is:

a) $f(x) = -x^4 + 4x^3 + 36x^2 - 140x + 150$ b) $f(x) = 2x^4 + 4x^3 - 36x^2 - 140x + 150$

c) $f(x) = -2x^4 + 4x^3 + 36x^2 - 140x + 150$ d) $f(x) = -x^4 + 2x^3 + 18x^2 - 70x + 75$ e) NONE

8) The inverse function & its domain, range of the function $f(x) = x^2 - 4x + 1, x \geq 2$ is:

a) $f^{-1}(x) = 2 - \sqrt{x+3}, x \geq 2, y \geq -3$ b) $f^{-1}(x) = 2 + \sqrt{x+3}, x \geq 2, y \geq -3$

c) $f^{-1}(x) = 2 + \sqrt{x+3}, x \geq -3, y \geq 2$ d) $f^{-1}(x) = 2 - \sqrt{x+3}, x \leq -3, y \leq 2$ e) No inverse, its not 1:1

9) If $x+3$ is a factor of the polynomial $f(x) = x^4 + kx^2 - 9$, then k is:

a) -4 b) -7 c) 8 d) -8 e) -6

10) The function representing the graph below is:

a) $f(x) = (x+1)(x-1)^2(x-2)$

b) $f(x) = (x-1)(x+1)^2(x+2)$

c) $f(x) = (-x-1)(x+1)^2(-x+2)$

d) $f(x) = (x-1)(x-1)^2(x+2)$

e) $f(x) = (x-1)(x+1)^2(x-2)$