Pre-Calculus Extra Unit B Review Questions Name: _Key_

C 1) Analyze the graph of $f(x) = \frac{1}{3}x^{-4}$ and give domain, range, and end behavior.

$D: (-\infty, 0) \cup (0, \infty)$ $R: (0, \infty)$ $EB: \lim_{x \to -\infty} f(x) = 0$ $\lim_{x \to \infty} f(x) = 0$

NC 2) Without a calculator, describe the end behavior using the leading term test: $f(x) = -3x^5 + 7x^4 + 3x^3 - 11x - 5$

$EB: \lim_{x \to \infty} f(x) = -\infty$ $\lim_{x \to -\infty} f(x) = \infty$ odd

NC 3) Without a calculator, find the domain, any vertical asymptotes, and any horizontal asymptotes: $f(x) = \frac{x^2}{x^2-25}$

$D: \begin{array}{l}(-\infty, -5) \cup \\ (-5, 5) \cup \\ (5, \infty)\end{array}$ $VA: \begin{array}{l}x = 5 \\ x = -5\end{array}$ $HA: y = 1$

C 4) Analyze the graph of $f(x) = 0.4^x$ and describe domain, range, and end behavior.

$D: (-\infty, \infty)$ $R: (0, \infty)$ $EB: \lim_{x \to -\infty} f(x) = \infty$ $\lim_{x \to \infty} f(x) = 0$

5) If you deposit $1000 in an account that earns 4.5% interest over a period of 3 years, find the amount in the account if interest is compounded:

C
a. once per year 1141.17
b. quarterly 1143.67
c. monthly 1144.25
d. daily 1144.53
e. continuously 1144.54

NC 6) Expand: $\log_3 9x^3y^3z^6$

$2 + 3\log_3 x + 3\log_3 y + 6\log_3 z$

NC 7) Expand: $\log \frac{\sqrt{g j^5 k}}{100}$

$\left[\frac{1}{2}\log g + \frac{5}{2}\log j + \frac{1}{2}\log k\right] - 2$

NC 8) Condense: $5\ln(x+3) + 3\ln 2x - 4\ln(x-1)$

$\ln \frac{(x+3)^5(2x-y)^3}{(x-1)^4}$

C 9) Solve & Round to the nearest hundredth: $7\ln 2x = 28$

$\ln 2x = 4$
$e^{\ln 2x} = e^4$
$\frac{2x}{2} = \frac{e^4}{2}$ $\boxed{27.30}$ ✓ it!

C 10) Solve: $\ln 2 + \ln x = \ln(x^2 - x + 2)$

$x^2 - x + 2 = 2x$

$(x-2)(x-1) = 0$

$\boxed{1, 2}$ ✓ it!

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3) Without a calculator, find the domain, any vertical asymptotes, and any horizontal asymptotes: $f(x) = \frac{x^2}{x^2-25}$

4) Analyze the graph of $f(x) = 0.4^x$ and describe domain, range, and end behavior.

5) If you deposit $1000 in an account that earns 4.5% interest over a period of 3 years, find the amount in the account if interest is compounded:
a. once per year
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6) Expand: $\log_3 9x^3y^3z^6$

7) Expand: $\log \frac{\sqrt{g j^5 k}}{100}$

8) Condense: $5\ln(x+3) + 3\ln 2x - 4\ln(x-1)$

9) Solve & Round to the nearest hundredth: $7\ln 2x = 28$

10) Solve: $\ln 2 + \ln x = \ln(x^2 - x + 2)$