Paul's Online Notes

Section 2.8 : Limits At Infinity, Part II - Practice Problems

For problems 1 – 6 evaluate **(a)** $\lim_{x\to -\infty} f(x)$ and **(b)** $\lim_{x\to \infty} f(x)$.

1. $f(x) = \mathbf{e}^{8+2x-x^3}$ [Solution]

2. $f(x) = \mathbf{e}^{\frac{6x^2+x}{5+3x}}$ [Solution]

3. $f(x) = 2\mathbf{e}^{6x} - \mathbf{e}^{-7x} - 10\mathbf{e}^{4x}$ [Solution]

4. $f(x) = 3\mathbf{e}^{-x} - 8\mathbf{e}^{-5x} - \mathbf{e}^{10x}$ [Solution]

5. $f(x) = \dfrac{\mathbf{e}^{-3x} - 2\mathbf{e}^{8x}}{9\mathbf{e}^{8x} - 7\mathbf{e}^{-3x}}$ [Solution]

6. $f(x) = \dfrac{\mathbf{e}^{-7x} - 2\mathbf{e}^{3x} - \mathbf{e}^{x}}{\mathbf{e}^{-x} + 16\mathbf{e}^{10x} + 2\mathbf{e}^{-4x}}$ [Solution]

For problems 7 – 12 evaluate the given limit.

7. $\lim_{t\to -\infty} \ln\left(4 - 9t - t^3\right)$ [Solution]

8. $\lim_{z\to -\infty} \ln\left(\dfrac{3z^4 - 8}{2 + z^2}\right)$ [Solution]

9. $\lim_{x\to \infty} \ln\left(\dfrac{11 + 8x}{x^3 + 7x}\right)$ [Solution]

10. $\lim_{x\to -\infty} \tan^{-1}\left(7 - x + 3x^5\right)$ [Solution]

11. $\lim_{t\to \infty} \tan^{-1}\left(\dfrac{4 + 7t}{2 - t}\right)$ [Solution]

12. $\displaystyle\lim_{w\to\infty}\tan^{-1}\left(\frac{3w^2-9w^4}{4w-w^3}\right)$ **[Solution]**

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