

So You Think You Can Succeed In Calculus

Do the following problems in your notebook, by yourself, and without a graphing calculator. Can't remember how to do them? Then, check out the resource page at our website <http://zendog.org/homework>

Factor the following polynomials:

1. $x^3 - 27$

2. $x^3 + 8$

3. $x^3 - 4x^2 - 77x$

Simplify the following expressions:

4. $\ln e^8 + \ln e + \ln 1$

5. $\tan^{-1}(1) + \sin^{-1}\left(\frac{\sqrt{3}}{2}\right)$

6. $\sin\left(\frac{3\pi}{2}\right) + \cos\left(\frac{\pi}{3}\right)$

7. $\cos^2(\pi) + \sin^2(\pi)$

8. $\sqrt{x} \left(x^7 - x^{\frac{11}{2}} + \sqrt[3]{x} \right)$

9. $\frac{x^4 + 2x^2 + 1 + \sqrt{x}}{\sqrt[3]{x}}$

Simplify and state the domain of the following expression:

10. $\frac{x^3 - 64x}{x^2 + 7x - 8}$

Write an equation for the specified lines:

11. Through $(1, -6)$ with slope of 3

12. Horizontal line through $(0, 3)$

13. With slope -3 and y-intercept 3

14. Through the points $(1, 4)$ and $(-7, -11)$

Graph the following functions on different sets of axes:

15. $f(x) = \ln x$

16. $v(t) = e^t$

17. $g(x) = \frac{1}{x}$

18. $s(t) = \frac{1}{t^2}$

19. $h(x) = |x|$

20. $a(t) = \begin{cases} -(t-2) & -4 \leq t \leq 2 \\ t-2 & 2 < t \leq 4 \end{cases}$