$(2x^3 - y^4)^{17}$

What is numerical coefficient when variable part is $x^{18}y^{44}$?

$_{17}C_{11}(2x^3)^{6}(-y^4)^{11}$

$(12376)(64)(-1)$

$= -792064$

Pg. 153

#8 b) $-4x^3-4x^2+16x+16$

$-4(x^3+x^2-4x-4)$

$x=-1$ $\quad -1+1+4-4=0$

$\therefore (x+1)$ is factor

	1	1	-4	-4
-1		-1	0	4
	1	0	-4	0

$-4(x+1)(x^2-4)$

$-4(x+1)(x-2)(x+2)$

Pg. 548

#15) $\left(y - \frac{2}{y^2}\right)^5$

$= {}_5C_0 (y)^5 \left(-\frac{2}{y^2}\right)^0 + {}_5C_1 (y)^4 \left(-\frac{2}{y^2}\right)^1 + {}_5C_2 (y)^3 \left(-\frac{2}{y^2}\right)^2$

$+ {}_5C_3 (y)^2 \left(-\frac{2}{y^2}\right)^3 + {}_5C_4 (y)^1 \left(-\frac{2}{y^2}\right)^4 + {}_5C_5 (y)^0 \left(-\frac{2}{y^2}\right)^5$

$= 1y^5 - 10y^2 + 40y^{-1} - 80y^{-4} + 80y^{-7} - 32y^{-10}$

Warm Up

1. Simplify: $\dfrac{\left(\frac{1}{x^2}-\frac{1}{9}\right)}{x-3} \div$

$\left(\frac{1}{x^2}-\frac{1}{9}\right)\cdot\frac{1}{x-3}$

$\left(\frac{9-x^2}{9x^2}\right)\cdot\frac{1}{x-3}$

-1

$\frac{(3-x)(3+x)}{9x^2}\cdot\frac{1}{x-3} = \frac{-1(3+x)}{9x^2} = \frac{-3-x}{9x^2}$

2. Factor each of the following:

$x^{27}-1$ $\quad (x^{27})^{\frac{1}{3}}$

$(x^9-1)(x^{18}+x^9+1)$

$(x^3-1)(x^6+x^3+1)(x^{18}+x^9+1)$

$(x-1)(x^2+x+1)(x^6+x^3+1)(x^{18}+x^9+1)$

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

$3x^7+12x^9$

$3x^7(1+4x^2)$

$(x^2+1)^{-\frac{1}{2}}\left[(x^2+1)^1+3(1)\right]$

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

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

$\frac{m^{\frac{1}{2}}}{m^{-\frac{1}{2}}} = m^1$

3. Rationalize the denominator:

$\dfrac{x+2}{\sqrt{x-4}-\sqrt{x-6}}$

$(a+b)(a-b)$

a^2-b^2

$\left(\frac{\sqrt{x-4}+\sqrt{x-6}}{\sqrt{x-4}+\sqrt{x-6}}\right)$ conjugate

$= \dfrac{(x+2)(\sqrt{x-4}+\sqrt{x-6})}{(x-4)-(x-6)}$

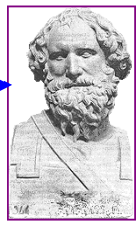
$= \dfrac{(x+2)(\sqrt{x-4}+\sqrt{x-6})}{2}$

Limits

What is meant by a limit in Mathematics?

Let's explore and find out!

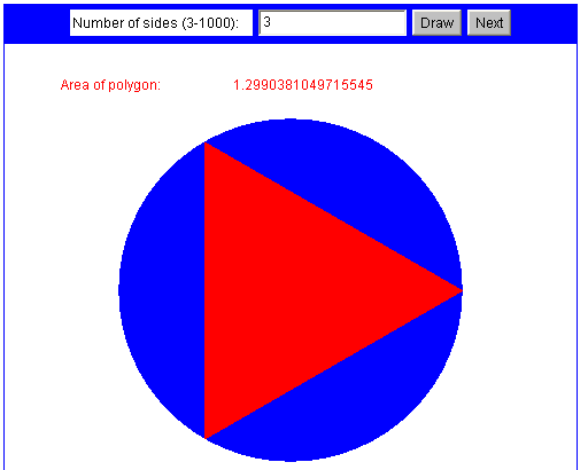
I bet he knows something about limits



Have a look at these two scenarios:

Determining the area of a circle using polygons

Approximating the area of a unit circle with regular polygons



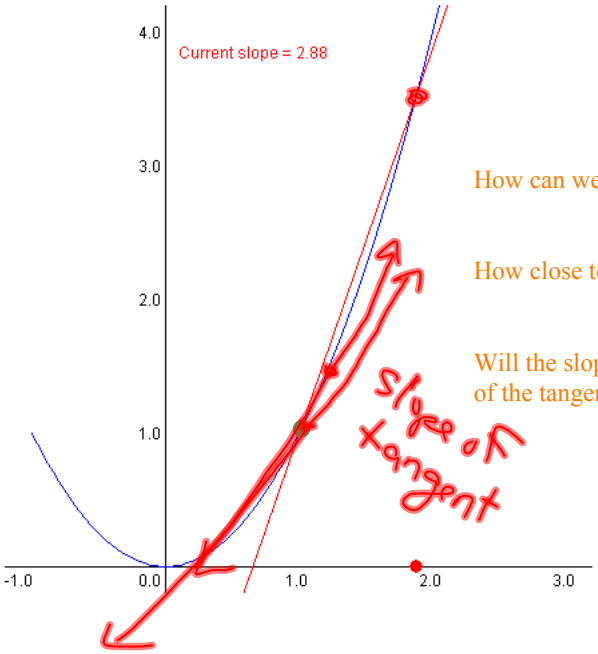
What should the area actually equal?

Will it ever equal this value?

What is the limit of the area of the polygon?

Determining the slope of a tangent to a curve

Secant line approximations to the tangent line



How can we find the slope of a secant?

How close to the point $x = 1$ should we choose?

Will the slope of the secant ever equal the exact slope of the tangent?