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Nemetex Nemeth Back-Translator Demonstration Document

1. $14.90 + 5.10 = 20$

2. $1 - .8511 = .1489$

3. $412 \times .58 = 238.96$

4. $\frac{1}{6} = 0.166\overline{6}$

5. $0 < x < 10$
$0 \leq y \leq 10$

6. $-\frac{\pi}{4} < \theta < \frac{\pi}{2}$

7. $\frac{\frac{w}{x}}{\frac{y}{z}}$

8. $\frac{1}{\sqrt{2}} \times \frac{2}{\sqrt{6}} = \frac{\sqrt{2}}{2} \times \frac{2\sqrt{6}}{6} = \frac{2\sqrt{2}\sqrt{6}}{12} = \frac{2\sqrt{12}}{12} = \frac{\sqrt{12}}{6} = \frac{2\sqrt{3}}{6} = \frac{\sqrt{3}}{3} \approx 0.577$

9. $\frac{x^2}{4} - \frac{y^2}{16} = 1$

10. $5^6 \times 2^4 \times 3^5 = 60,750,000$

11. $5! = 120$

12. $5^{25x^{30}+2} + 1$

13. $\triangle ABC \cong \triangle DEF$

14. $a = \{2\ 4\ 6\ 8\}$
$b = \{3\ 6\ 9\ 12\}$
$a \cup b = \{2\ 3\ 4\ 6\ 8\ 9\ 10\ 12\}$
$a \cap b = \{6\}$

15. $\overleftrightarrow{AB} \perp \overleftrightarrow{CD}$

16. $\sqrt[4]{a^5 b} = a^{5/4} b^{1/4}$

17. $64x^3 + 240x^2y + 300xy^2 + 125y^3$

18. $f^{-1}(x) = \log_x \left(\frac{3}{4}\right)$

19. $73 \div \tan 75° \approx 20$ inches

20. $\ln x - \ln 2 = 4 \ln y$

21. $\frac{5-\frac{1}{x^3}}{\frac{4}{x^3}-2} = \frac{\left(5-\frac{1}{x^2}\right)x^3}{\left(\frac{4}{x^3-2}\right)x^3} = \frac{5x^3-1}{4-2x^3},\ x \neq \sqrt[3]{2},\ x \neq 0$

22. $\arctan\left(\frac{3}{6}\right) = \arctan\left(\frac{1}{2}\right) \approx 26.6°$

23. $\arccos\left(-\frac{13^2-\left(12^2+5^2\right)}{2\times12\times5}\right)=90^\circ$

24. $\sin 90^\circ = 1$

25. $e^{-2.58} \approx 0.075774$

26.
$$\begin{aligned} 5x^2+2x+7 &= 4x+11 \\ 5x^2+2x-4x+7-11 &= 4x-4x+11-11 \\ 5x^2-2x-4 &= 0 \end{aligned}$$

27. $p \Rightarrow q \equiv \sim q \Rightarrow \sim p$

28. $p \Rightarrow q$
$\sim q$
$\therefore \sim p$

29. a. $\lim\limits_{x\to 0^+} \frac{5}{x^4} = \infty$, $\lim\limits_{x\to 0^-} \frac{5}{x^4} \to \infty$
b. $\lim\limits_{x\to\infty} \frac{5}{x^4} = 0$, $\lim\limits_{x\to -\infty} \frac{5}{x^4} = 0$

30. $f\left(x_1+\Delta\, x\right)$

31. $\sum\limits_{i=1}^{k} i = \frac{k(k+1)}{2}$

32. $\binom{5}{3} = \frac{5!}{3!(5-3)!} = \frac{5!}{6\times 2!} = \frac{120}{6\times 2} = \frac{120}{12} = 10$

33. a. There is a largest degree for a polynomial.
b. The degree of a polynomial is any nonnegative integer. Suppose there exists a largest integer degree n for a polynomial. Then, because the integers are closed under addition, $n+1$ is also an integer and a possible degree. Because $n+1>n,\ n$ is not the largest possible degree for a polynomial. Therefore there is no largest degree for a polynomial.

34. $\begin{bmatrix} a & b & c \\ d & e & f \end{bmatrix} \times \begin{bmatrix} g & h \\ i & j \\ k & l \end{bmatrix} = \begin{bmatrix} ag+bi+ck & ah+bj+cl \\ dg+ei+fk & dh+ej+fl \end{bmatrix}$

35. $\int_a^b 2x^3 dx$