Limits

In the last two cases, there is an "obfuscation factor" on the top and bottom that is preventing you from seeing what the limit is. Simplify the fractions so you can cancel that factor get a clear look at what the limit is.

1. $\lim_{x\to 0} 2 + x =$
2. $\lim_{x\to 0} 2 + 3x =$
3. $\lim_{x\to 0} \frac{2x}{3x} =$
4. $\lim_{x\to \infty} \frac{1}{x} =$
5. $\lim_{x\to \infty} 2 + \frac{3}{x} =$
6. $\lim_{x\to 0} \frac{2x+x^2}{3x-6x^2} =$
7. $\lim_{x\to 1} \frac{x-1}{x^2-1} =$

Logs

8. $\log_2(4) =$
9. $\log_2(8) =$
10. $\log_2(16) =$
11. $\log_2(2) =$
12. $\log_2(\frac{1}{2}) =$
13. $\log_3(9) =$
14. $\log_3(81) =$
15. $\log_3(\frac{1}{27}) =$
16. $\log_4(16) =$
17. $\log_4(64) =$
18. $\log_5(25) =$
19. $\log_5(125) =$
20. $\log_{10}(100) =$
21. $\log_{10}(\frac{1}{10}) =$
22. $\log_{10}(.1) =$
23. $\log_{10}(.001) =$
24. $\log_{10}(1,000,000) =$

Fractional/Negative Exponents

1. $9^{\frac{1}{2}} =$

2. $9^{-1} =$

3. $9^{-\frac{1}{2}} =$

4. $8^{\frac{1}{3}} =$

5. $8^{-\frac{1}{3}} =$

6. $8^{\frac{4}{3}} =$

7. $8^{-\frac{2}{3}} =$

8. $64^{\frac{1}{2}} =$

9. $64^{\frac{1}{3}} =$

10. $64^{\frac{2}{3}} =$

Fractions and Reciprocals

1. $\left(10^{-1} + 15^{-1} + 6^{-1}\right)^{-1} =$

2. $\left(12^{-1} - 24^{-1} + 36^{-1}\right)^{-1} =$

Decimals

Write each the following as a decimal, then write its equivalent value as a percent.

1. $\frac{1}{10} + \frac{2}{100} + \frac{3}{1000} =$

2. $\frac{1}{5} + \frac{1}{20} + \frac{3}{500} =$

3. $\frac{3}{4} - \frac{1}{5} + \frac{1}{200} =$

4. $\frac{4}{100} + \frac{5}{10{,}000} + \frac{6}{1{,}000{,}000} =$

5. $\frac{4}{10} - \frac{5}{100} + \frac{6}{1{,}000} =$

Distributing

Multiply out the following

1. $(a+b)(c+d)(e+f) =$

2. $(a-b)(c-d)(e-f) =$

3. $(x+2)(x-5) =$

4. $(a+b+c)(d+e+f) =$

5. $(k+c)(k^4 - k^3c + k^2c^2 - kc^3) =$

6. $(4xy^2k^{-2} + 3x^{-1})(xk^3 - yk) =$

Factoring

Factor the following polynomials

1. $x^3 - 1 =$

2. $x^3 + y^3 =$

3. $x^2 + 15x + 50 =$

4. $x^2 - 15x + 50 =$

5. $x^2 + 5x - 50 =$

6. $x^2 - 5x - 50 =$

7. $12x^2 - 7x + 1 =$

Canceling Linear Factors

Simplify the following rational functions. They should all end up as polynomials.

1. $\frac{x^2-1}{x-1} =$

2. $\frac{x^3-8}{x-2} =$

3. $\frac{3x^2+6x+3}{x+2} =$

Fractional/Negative Exponents (Algebra)

For each expression, simplify and write the result as a fraction using only positive exponents. #3 is a challenge.

1. $\frac{12a^{-2}b^3c^{-4}}{16a^{-3}b^{-1}c^3} =$

2. $\frac{10kxy-4k^{-1}x^2y}{6k^{-2}x^{-2}y^{-2}+12kxy} =$

3. $\left((a^{12}b^6)^{-\frac{1}{2}}\right)^{-\frac{1}{3}} =$