

Problems for Gateway #2: Antiderivatives Involving Natural Logarithms

1. Calculate the most general antiderivative of: $f(x) = \frac{1}{1+x}$.
2. Calculate the most general antiderivative of: $f(x) = \frac{2}{7+x}$.
3. Calculate the most general antiderivative of: $f(x) = \frac{3}{1-x}$.
4. Calculate the most general antiderivative of: $f(x) = \frac{4}{1+x}$.
5. Calculate the most general antiderivative of: $f(x) = \frac{1}{1+2x}$.
6. Calculate the most general antiderivative of: $f(x) = \frac{5}{1+2x}$.
7. Calculate the most general antiderivative of: $f(x) = \frac{1}{1-3x}$.
8. Calculate the most general antiderivative of: $f(x) = \frac{4}{1-5x}$.
9. Calculate the most general antiderivative of: $f(x) = \frac{1}{13+x}$.
10. Calculate the most general antiderivative of: $f(x) = \frac{1}{7+2x}$.

Answers

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| 1. $F(x) = \ln(1+x) + C$ | 2. $F(x) = 2 \cdot \ln(7+x) + C$ |
| 3. $F(x) = -3 \cdot \ln(1-x) + C$ | 4. $F(x) = 4 \cdot \ln(1+x) + C$ |
| 5. $F(x) = \frac{1}{2} \cdot \ln(1+2x) + C$ | 6. $F(x) = \frac{5}{2} \cdot \ln(1+2x) + C$ |
| 7. $F(x) = \frac{-1}{3} \cdot \ln(1-3x) + C$ | 8. $F(x) = \frac{4}{5} \cdot \ln(1-5x) + C$ |
| 9. $F(x) = \ln(13+x) + C$ | 10. $F(x) = \frac{1}{2} \cdot \ln(7+2x) + C$ |