## Indefinite Integrals P-Set

Determine if the function $F$ is the general antiderivative of the function $f$.

1. $F(x) = 6x + C$; $f(x) = 6$

2. $F(x) = \frac{1}{2}x^3 + C$; $f(x) = x^2$

3. $F(x) = 7x + ex + C$; $f(x) = 7 + e$

Determine each indefinite integral. Don't forget to include the $+C$ at the end!

4. $\displaystyle\int x^4 \, dx$

5. $\displaystyle\int x^{2.31} \, dx$

6. $\displaystyle\int \frac{1}{x^3} \, dx$

7. $\displaystyle\int \sqrt[4]{x^5} \, dx$

8. $\displaystyle\int 0.4x^6 \, dx$

9. $\displaystyle\int (2x + 3) \, dx$

10. $\displaystyle\int (3x^2 + 2x + 10) \, dx$

11. $\displaystyle\int \left( \frac{1}{x^2} - \frac{3}{x^3} \right) dx$

12. $\displaystyle\int \left( 3x^{-4} + 6x^5 \right) dx$

13. $\displaystyle\int (3 + 2\sqrt{x}) \, dx$

14. $\displaystyle\int \left( \sqrt{x} - 3x^{3/2} \right) dx$

15. $\displaystyle\int \left( 2x^{0.13} + 5 \right) dx$

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Key

1. Yes

2. No

3. Yes

4. $\frac{1}{5}x^5 + C$

5. $\frac{1}{3.31}x^{3.31} + C$

6. $-\frac{1}{2x^2} + C$

7. $\frac{4}{9}x^{9/4} + C$

8. $\frac{2}{35}x^7 + C$

9. $x^2 + 3x + C$

10. $x^3 + x^2 + 10x + C$

11. $-\frac{1}{x} + \frac{3}{2x^2} + C$

12. $-x^{-3} + x^6 + C$

13. $3x + \frac{4}{3}x^{3/2} + C$

14. $\frac{2}{3}x^{3/2} - \frac{6}{5}x^{5/2} + C$

15. $\frac{2}{1.13}x^{1.13} + 5x + C$