1. $\frac{1}{3}x^9 - x^6 + \frac{8}{3}x^3 - x + C$

2. $e \ln |z| + C$

3. $\frac{6}{5}\left(e^{15} - e^{-15}\right)$

4. 16

5. $\frac{1}{3}w^3 - \frac{3}{2}w^{\frac{2}{3}} + C$

6. 7

7. $\frac{3}{4}t^{\frac{4}{3}} - \frac{1}{3t^3} + C$

8. 1

9. -8

10. $x^{10} + \frac{4}{x^{\frac{3}{2}}} + C$

11. $\frac{1}{12}$

12. 8

13. $30,803.72

14. 4,647.27 acres are left.

15. 294,499.9969 liters are left.

16. $F(t) = \frac{1}{3}e^{3t} - \frac{1}{4}t^4 + C$

17. $\frac{1}{6}$

18. The total variable cost is $3,948.

19. The total population after 25 years is approximately 586,673 Na'vi.