Homework 14   Final Answers

1(a), (b) -20

2. $g''(x) = -\dfrac{\sin(2x)}{\sqrt{1-\cos(2x)}}$

3. $-\dfrac{1}{56}\left(30-x^8\right)^7 + C$

4. 3

5. $\dfrac{7}{5}\sin(5x) + \dfrac{5}{7}\cos(7x) + C$

6. $\dfrac{1}{56}$

7. $-\dfrac{61}{2}$

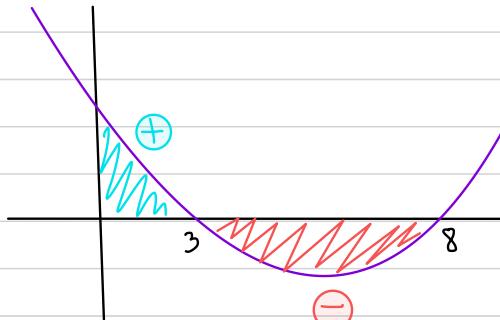8. $\dfrac{1}{2\pi}$

9. $\dfrac{-2\sqrt{7}}{\sqrt{x}+4} + C$

10. $\dfrac{9}{4}$

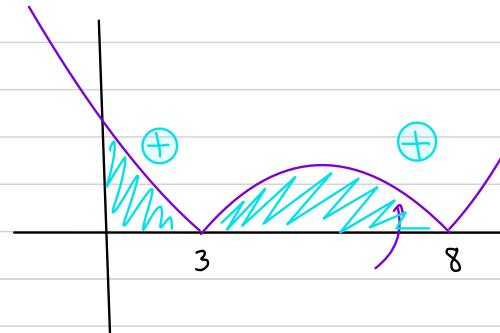11. $\dfrac{1}{3}\left(x^2+1\right)^{3/2} + \sqrt{x^2+1} + C$

12. $\dfrac{(x+1)^{16}}{16} - \dfrac{(x+1)^{15}}{15} + C$

13. $v(t) = t^2 - 11t + 24$

$v(t) = \left| t^2 - 11t + 24 \right|$

Cases:

$|v(t)| = \left| t^2 - 11t + 24 \right|$

$$= \begin{cases} t^2 - 11t + 24 & \text{if } t \le 3 \text{ or } t \ge 8 \\ -t^2 + 11t - 24 & \text{if } 3 < t < 8 \end{cases}$$

Displacement $= \displaystyle\int_0^8 t^2 - 11t + 24 \, dt$

Total Distance $= \displaystyle\int_0^3 t^2 - 11t + 24 \, dt + \int_3^8 -t^2 + 11t - 24 \, dt$

Do Not Need to Compute these