

$$5. \textcircled{a} A = \eta P(-135) + \sigma W 120 - \epsilon \varphi 240$$

$$A = -\eta P 135 + \sigma W (180 - 60) - \epsilon \varphi (180 + 60)$$

$$A = -\eta P (180 - 45) - \sigma W 60 - \epsilon \varphi 60$$

$$A = -\eta P 45 - \frac{1}{2} - \sqrt{3}$$

$$A = -\frac{\sqrt{2}}{2} - \frac{1}{2} - \sqrt{3}$$

$$\textcircled{B} B = \sigma W \frac{5n}{4} - \epsilon \varphi \frac{2n}{3} + \eta P \left(-\frac{7n}{6} \right)$$

$$B = \sigma W \left(\frac{4n}{4} + \frac{n}{4} \right) - \epsilon \varphi \left(\frac{2n}{3} - \frac{n}{3} \right) - \eta P \frac{7n}{6}$$

$$B = \sigma W \left(n + \frac{n}{4} \right) - \epsilon \varphi \left(n - \frac{n}{3} \right) - \eta P \left(\frac{6n}{6} + \frac{n}{6} \right)$$

$$B = -\sigma W \frac{n}{4} + \epsilon \varphi \frac{n}{3} - \eta P \left(n + \frac{n}{6} \right)$$

$$B = -\frac{\sqrt{2}}{2} + \sqrt{3} + \eta P \frac{n}{6} = -\frac{\sqrt{2}}{2} + \sqrt{3} + \frac{1}{2}$$

7. (a) $A = n p 10 + \sigma w 70 + \sigma w 110 + n p 90$

$$A = n p 10 + \sigma w 70 + \sigma w (180 - 70) + n p (180 + 10)$$

$$A = \cancel{n p 10} + \cancel{\sigma w 70} - \cancel{\sigma w 70} - \cancel{n p 10}$$

$$A = 0$$

8. (b)

$$\epsilon \psi \frac{n}{7} \cdot \epsilon \psi \frac{3n}{7} \cdot \epsilon \psi \frac{5n}{14} \cdot \epsilon \psi \frac{n}{14} = 1$$

$$\downarrow$$

$$\sigma \psi \frac{3n}{7}$$

$$\bullet \frac{n}{2} - \frac{3n}{7} = \frac{7n}{14} - \frac{6n}{14} = \frac{n}{14}$$

$$\bullet \cos \psi \frac{n}{14} = \epsilon \psi \left(\frac{n}{2} - \frac{3n}{7} \right) = \sigma \psi \frac{3n}{7}$$

$$\frac{n}{2} - \frac{n}{7} = \frac{7n}{14} - \frac{2n}{14} = \frac{5n}{14}$$

$$\epsilon \psi \frac{5n}{14} = \epsilon \psi \left(\frac{n}{2} - \frac{n}{7} \right) = \sigma \psi \frac{n}{7}$$

$$\epsilon \psi \frac{n}{7} \cdot \epsilon \psi \frac{3n}{7} \cdot \underbrace{\sigma \psi \frac{n}{7} \cdot \sigma \psi \frac{3n}{7}}_{= 1 \cdot 1 = 1} = 1 \cdot 1 = 1$$

$$! \quad II. \quad \textcircled{a} \quad \frac{\eta p \left(\frac{3n}{2} - \theta \right) \sigma w \left(\frac{n}{2} + \theta \right) \varepsilon \psi \left(\frac{n}{2} - \theta \right)}{\sigma w \left(\frac{5n}{2} + \theta \right) \sigma \psi \left(-\theta \right) \sigma \psi \left(\frac{n}{2} + \theta \right)}$$

$$\bullet \eta p \left(\frac{3n}{2} - \theta \right) = \eta p \left(\frac{2n}{2} + \frac{n}{2} - \theta \right) = \eta p \left(n + \frac{n}{2} - \theta \right)$$

$$= -\eta p \left(\frac{n}{2} - \theta \right) = -\sigma w \theta$$

$$\bullet \sigma w \left(\frac{n}{2} + \theta \right) = \sigma w \left(\frac{n}{2} - (-\theta) \right) = \eta p \left(-\theta \right) = -\eta p \theta$$

$$\bullet \varepsilon \psi \left(\frac{n}{2} - \theta \right) = \varepsilon \psi \left(-\theta \right) = -\varepsilon \psi \theta$$

$$\bullet \sigma w \left(\frac{5n}{2} + \theta \right) = \sigma w \left(\frac{4n}{2} + \frac{n}{2} + \theta \right) = \sigma w \left(\frac{n}{2} + \theta \right)$$

$$= \sigma w \left(\frac{n}{2} - (-\theta) \right) = \eta p \left(-\theta \right) = -\eta p \theta$$

$$\bullet \sigma \psi \left(-\theta \right) = -\sigma \psi \theta$$

$$\bullet \sigma \psi \left(\frac{n}{2} + \theta \right) = \sigma \psi \left(\frac{n}{2} - (-\theta) \right) = \varepsilon \psi \left(-\theta \right) = -\varepsilon \psi \theta$$

$$\frac{-500 \cancel{(-40)} \cancel{(-40)}}{\cancel{(-40)} \cancel{(-40)} \cancel{(-40)}}$$

$$\cancel{(-40)} \cancel{(-40)} \cancel{(-40)}$$

$$= \frac{-500}{-40}$$

$$= \frac{500}{40} = 12.5 \quad \checkmark$$

12. (a)

$$\frac{\text{нр } 380 \quad \sigma \text{w } 950 \quad \epsilon \psi 850}{\text{нр } 1220 \quad \sigma \psi 400 \quad \text{нр } 340}$$

• $\text{нр } 380 = \text{нр}(360 + 20) = \text{нр } 20$

• $\sigma \text{w } 950 = \sigma \text{w}(2 \cdot 360 + 230) = \sigma \text{w } 230 = \sigma \text{w}(180 + 50)$

• $\epsilon \psi 850 = \epsilon \psi(2 \cdot 360 + 130) = \epsilon \psi 130 = \epsilon \psi(180 - 50)$
 $= -\sigma \text{w } 50$
 $= -\epsilon \psi 50$

• $\text{нр } 1220 = \text{нр}(3 \cdot 360 + 140) = \text{нр } 140 = \text{нр}(180 - 40)$
 $= \text{нр } 40$

• $\sigma \psi 400 = \sigma \psi 360 + 40 = \sigma \psi 40$

• $\text{нр } 340 = \text{нр}(360 - 20) = \text{нр}(-20) = -\text{нр } 20$

$$\frac{\cancel{\text{нр } 20} \cdot (-\sigma \text{w } 50) \cdot (-\epsilon \psi 50)}{\text{нр } 40 \quad \sigma \psi 40 \quad (\cancel{\text{нр } 20})} = \frac{\cancel{\sigma \text{w } 50} \cdot \cancel{\epsilon \psi 50} \cdot \cancel{\text{нр } 20}}{\cancel{\text{нр } 40} \cdot \cancel{\sigma \psi 40} \cdot \cancel{\text{нр } 20}} = \frac{\sigma \text{w } 50}{\sigma \psi 40}$$

$$= \frac{up\ 80-40)}{\delta w40}$$

$$= \frac{\delta w40}{\delta w40} =$$


10. $P(x) = x^2 - x + 1$ $Q(x) = 2x - 3$.

$$(a) \left(P(x) \right)^2 = \left(x^2 - x + 1 \right)^2 =$$

$$= (x^2 - x)^2 + 2(x^2 - x) \cdot 1 + 1^2$$

$$= x^4 - 2x^3 + x^2 + 2x^2 - 2x + 1$$

$$= x^4 - 2x^3 + 3x^2 - 2x + 1.$$

$$(b) P(Q(x)) = (2x - 3)^2 - (2x - 3) + 1 =$$

$$(c) Q(Q(x)) = 2(2x - 3) - 3 = 4x - 9$$

