**Gateway Exam #1 Practice Problems**
**Factoring Expressions**

1. If you were to factor the expression $ax^2 + bx^2$ you could obtain:
   (a) $abx^2$
   (b) $2ax^2$
   (c) $(a + b)x^2$
   (d) $2bx^2$
   (e) It is not possible to factor the given expression.

2. If you were to factor the expression $ax + 3x^2$ you could obtain:
   (a) $ax(1 + 3x)$
   (b) $3a(x + x^2)$
   (c) $a(x + 3x^2)$
   (d) $x(a + 3x)$
   (e) It is not possible to factor the given expression.

3. If you were to factor the expression $3u^2 + 9u^3$ you could obtain:
   (a) $3u(1 + 9u)$
   (b) $3u^2(1 + 3u)$
   (c) $u^2(1 + 9u^3)$
   (d) $9u^3(3u + 1)$
   (e) $u^2(3u^2 + 9u^3)$

4. If you were to factor the expression $x^{1/2} + x^{3/2}$ you could obtain:
   (a) $x^{1/2}(1 + x)$
   (b) $x(x^{1/2} + x^{3/2})$
   (c) $x^{3/2}(1 + x)$
   (d) $x^2(x + x^3)$
   (e) $x^{1/2}(1 + x^{3/2})$

5. If you were to factor the expression $xu + 3u^2$ you could obtain:
   (a) $xu(1 + 3u)$
   (b) $x(1 + 3u^2)$
   (c) $4xu$
   (d) $x(u + 3u^2)$
   (e) $u(x + 3u)$

6. If you were to factor the expression $w^{3/2} + w^3$ you could obtain:

   (a) $w(w + w^2)$
   (b) $w^{1/2}(w^3 + w^3)$
   (c) $w^2(w^{1/2} + w)$
   (d) $w^{3/2}(1 + w^{3/2})$
   (e) It is not possible to factor the given expression.

7. If you were to factor the expression $x^2 + 2x + 1$ you could obtain:

   (a) $(x + 1)^2$
   (b) $x^2 + 1^2$
   (c) $(x + 2)(x + 1)$
   (d) $(x + 2)^2$
   (e) $(x + 2)(x + 2)$

8. If you were to factor the expression $u^2 + 6u + 9$ you could obtain:

   (a) $(u + 3)(u + 6)$
   (b) $(u + 4)(u + 5)$
   (c) $(u + 1)(u + 9)$
   (d) $(u + 3)^2$
   (e) $(u + 6)^2$

9. If you were to factor the expression $2x^2 + 4x + 2$ you could obtain:

   (a) $(2x + 1)^2$
   (b) $(2x + 2)^2$
   (c) $2(x + 1)^2$
   (d) $(x + 2)^2$
   (e) $(x + 1)(x + 4)$

10. If you were to factor the expression $x^2 - 1$ you could obtain:

    (a) $(x + 1)^2$
    (b) $(x + 1)(x - 1)$
    (c) $(x - 1)^2$
    (d) $(x + 2)(x - 1)$
    (e) $(x + 1)(x - 2)$

11. If you were to factor the expression $u^2 - 9$ you could obtain:

    (a) $(u - 3)^2$
    (b) $(u + 3)(u - 3)$
    (c) $(u + 3)^2$

(d) $(u+1)(u+3)$
(e) $(u+1)(u-9)$

12. If you were to factor the expression $4-w^2$ you could obtain:

(a) $(2-w)^2$
(b) $(w+2)(w-2)$
(c) $(2+w)(2-w)$
(d) $(w-2)^2$
(e) $(4+w)(4-w)$

13. If you were to factor the expression $t^2+3t+2$ you could obtain:

(a) $(t+1)(t+2)$
(b) $(t+1)(t+3)$
(c) $(t+3)(t-1)$
(d) $(t+2)(t-1)$
(e) $(t+5)(t+1)$

14. If you were to factor the expression $3x^2+6x+3$ you could obtain:

(a) $3(x+1)(x+2)$
(b) $(x+3)(x+2)$
(c) $(3x+1)(x+1)$
(d) $3(x+1)^2$
(e) $(x-1)(3x+2)$

15. If you were to factor the expression $q^2+7q+12$ you could obtain:

(a) $(q+2)(q+6)$
(b) $(q+3)^2+1$
(c) $(q+4)(q+8)$
(d) $(3q+1)(4q+2)$
(e) $(q+3)(q+4)$

**Answers:**

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|---|---|---|---|---|---|---|---|---|---|
| 1. | c | 2. | d | 3. | b | 4. | a | 5. | e |
| 6. | d | 7. | a | 8. | d | 9. | c | 10. | b |
| 11. | b | 12. | c | 13. | a | 14. | d | 15. | e |