25 Elizabeth tried to find the product of $(2 + 4i)$ and $(3 - i)$, and her work is shown below.

$$(2 + 4i)(3 - i)$$
$$= 6 - 2i + 12i - 4i^2$$
$$= 6 + 10i - 4i^2$$
$$= 6 + 10i - 4(1)$$
$$= 6 + 10i - 4$$
$$= 2 + 10i$$

Identify the error in the process shown and determine the correct product of $(2 + 4i)$ and $(3 -$

2 Which expression is equivalent to $(3k - 2i)^2$, where i is the imaginary unit?

(1) $9k^2 - 4$ (3) $9k^2 - 12ki - 4$

(2) $9k^2 + 4$ (4) $9k^2 - 12ki + 4$

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(2) $9k^2 + 4$ (4) $9k^2 - 12ki + 4$

3 The roots of the equation $x^2 + 2x + 5 = 0$ are

(1) -3 and 1 (3) $-1 + 2i$ and $-1 - 2i$

(2) -1, only   (4) $-1 + 4i$ and $-1 - 4i$

15 The expression $6 - (3x - 2i)^2$ is equivalent to

(1) $-9x^2 + 12xi + 10$

(2) $9x^2 - 12xi + 2$

(3) $-9x^2 + 10$

(4) $-9x^2 + 12xi - 4i + 6$

5 Where i is the imaginary unit, the expression $(x + 3i)^2 - (2x - 3i)^2$ is equivalent to

(1) $-3x^2$

(2) $-3x^2 - 18$

(3) $-3x^2 + 18xi$

(4) $-3x^2 - 6xi - 18$

27 Solve the equation $2x^2 + 5x + 8 = 0$. Express the answer in $a + bi$ form.

4 The expression $6xi^3(-4xi + 5)$ is equivalent to

(1) $2x - 5i$

(3) $-24x^2 + 30x - i$

(2) $-24x^2 - 30xi$

(4) $26x - 24x^2i - 5i$

Answer Key:

Page 1: N/A

Page 2: 3

Page 3: 3

Page 4: 3

Page 5: 1

Page 6: 3

Page 7: N/A

Page 8: 2