Section 10.7 – Polar Coordinates

I. Graph and label each point.

1. \(A(3, 30^\circ)\)
2. \(B(5, 240^\circ)\)
3. \(C(1, 135^\circ)\)
4. \(D(2, -60^\circ)\)
5. \(E(-2, 45^\circ)\)
6. \(F(-4, 300^\circ)\)
7. \(G(-5, -45^\circ)\)
8. \(H(-2, 0^\circ)\)
9. \(I(0, -270^\circ)\)

II. State three other pairs of polar coordinates for each point where \(-360^\circ < \theta < 360^\circ\). Show work.

10. \((-2, 150^\circ)\)
11. \((5, -60^\circ)\)

III. State three other pairs of polar coordinates for each point where \(-2\pi < \theta < 2\pi\). Show work.

12. \((4, \frac{\pi}{5})\)
13. \((-3, \frac{2\pi}{3})\)

IV. A point in polar coordinates is given. Convert the point to rectangular coordinates. Show work.

14. \((3, \frac{\pi}{2})\)
15. \((-1, \frac{5\pi}{4})\)
16. \( \left( 2, \frac{7\pi}{6} \right) \)

17. \((-2.5, 1.1)\)

Use a calculator.

<table>
<thead>
<tr>
<th>V. A point in rectangular coordinates is given. Convert the point to polar coordinates. Show work.</th>
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</thead>
<tbody>
<tr>
<td>18. ((-3, -3))</td>
</tr>
<tr>
<td>19. ((-6, 0))</td>
</tr>
<tr>
<td>20. ((4, -4\sqrt{3}))</td>
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<tr>
<td>21. ((-3, 4))</td>
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<thead>
<tr>
<th>VI. Convert the rectangular equation to polar form.</th>
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<tbody>
<tr>
<td>22. (x^2 + y^2 = 9)</td>
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<tr>
<td>23. (y = 4)</td>
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<td>24. (y = x)</td>
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<th>VII. Convert each polar equation to rectangular form.</th>
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<tbody>
<tr>
<td>25. (r = -5\sec \theta)</td>
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<tr>
<td>26. (r = 4\sin \theta)</td>
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<tr>
<td>26. (r = 4)</td>
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