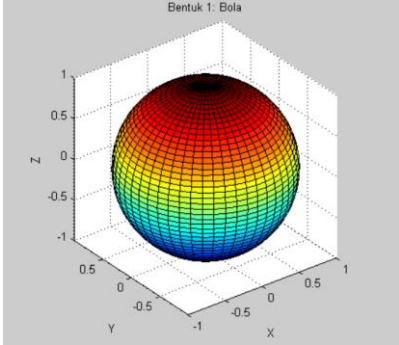
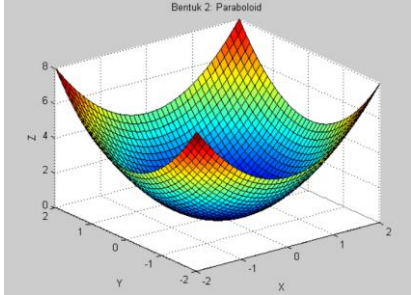
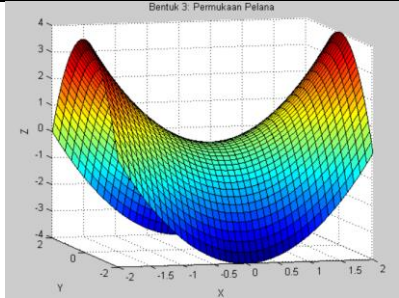
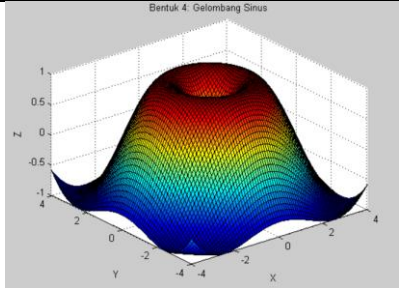
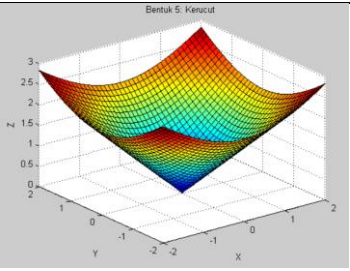
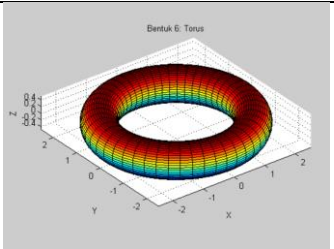
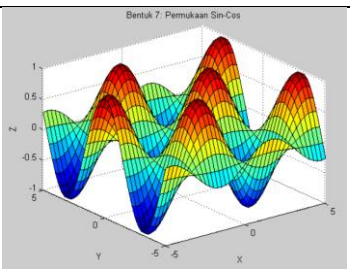
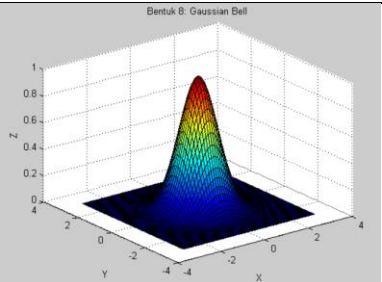
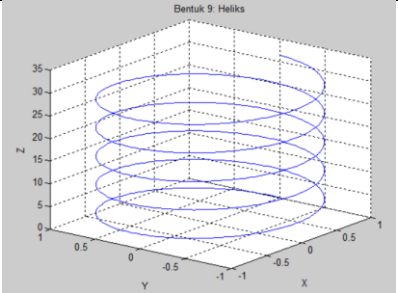
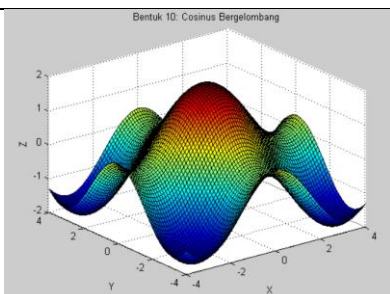
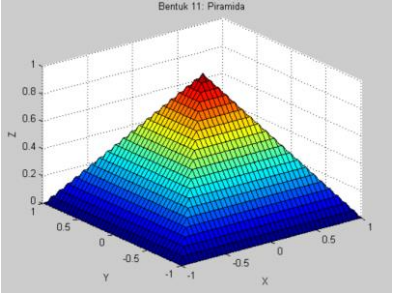
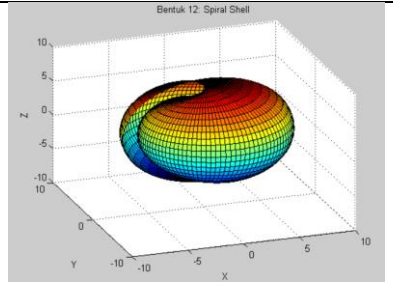
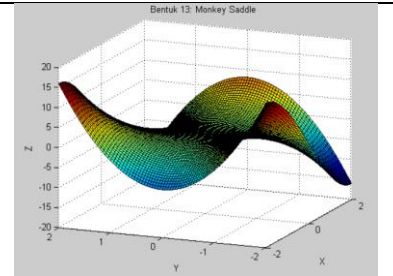
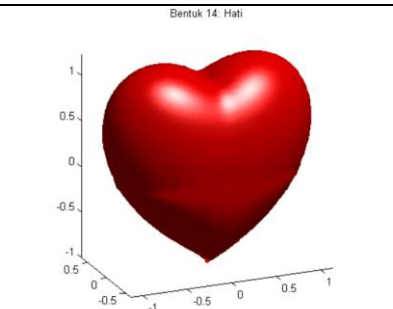
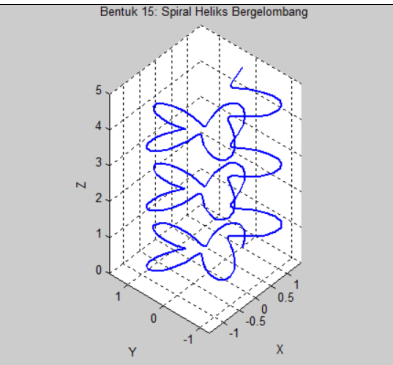


## TUGAS 4 KOMPUTASI MATEMATIKA

Nama : Ceria Malika Putri Riawan  
NIM : 662023008

Nama Fungsi	Codingan	Output
Bola (Sphere)	<pre>% Bentuk 1: Bola(Sphere) figure; [x, y, z] = sphere(50); surf(x, y, z) title('Bentuk 1: Bola') axis equal xlabel('X'); ylabel('Y'); zlabel('Z');</pre>	
Paraboloid	<pre>% Bentuk 2: Paraboloid figure; [x, y] = meshgrid(-2:0.1:2, -2:0.1:2); z = x.^2 + y.^2; surf(x, y, z) title('Bentuk 2: Paraboloid') xlabel('X'); ylabel('Y'); zlabel('Z');</pre>	
Permukaan Pelana	<pre>% Bentuk 3: Saddle Surface (Permukaan Pelana) figure; [x, y] = meshgrid(-2:0.1:2, -2:0.1:2); z = x.^2 - y.^2; surf(x, y, z) title('Bentuk 3: Permukaan Pelana') xlabel('X'); ylabel('Y'); zlabel('Z');</pre>	
Gelombang Sinus	<pre>% Bentuk 4: Gelombang Sinus 3D figure; [x, y] = meshgrid(-4:0.1:4, -4:0.1:4); z = sin(sqrt(x.^2 + y.^2)); surf(x, y, z) title('Bentuk 4: Gelombang Sinus') xlabel('X'); ylabel('Y'); zlabel('Z');</pre>	

Kerucut	<pre> % Bentuk 5: Kerucut (Cone) figure; [x, y] = meshgrid(-2:0.1:2, -2:0.1:2); z = sqrt(x.^2 + y.^2); surf(x, y, z) title('Bentuk 5: Kerucut') xlabel('X'); ylabel('Y'); zlabel('Z'); </pre>	
Torus (Donat)	<pre> Tugas_4_Ceria.m x 41 % Bentuk 6: Torus (Donat) 42 figure; 43 theta = linspace(0, 2*pi, 50); 44 phi = linspace(0, 2*pi, 50); 45 [theta, phi] = meshgrid(theta, phi); 46 R = 2; r = 0.5; 47 x = (R + r*cos(phi)) .* cos(theta); 48 y = (R + r*cos(phi)) .* sin(theta); 49 z = r .* sin(phi); 50 surf(x, y, z) 51 title('Bentuk 6: Torus') 52 xlabel('X'); ylabel('Y'); zlabel('Z'); 53 axis equal </pre>	
Permukaan Sin-Cos	<pre> Tugas_4_Ceria.m x 55 % Bentuk 7: Permukaan Sin-Cos 56 figure; 57 [x, y] = meshgrid(-5:0.25:5, -5:0.25:5); 58 z = sin(x) .* cos(y); 59 surf(x, y, z) 60 title('Bentuk 7: Permukaan Sin-Cos') 61 xlabel('X'); ylabel('Y'); zlabel('Z'); 62 </pre>	
Permukaan Gaussian	<pre> Tugas_4_Ceria.m x 62 63 % Bentuk 8: Permukaan Gaussian 64 figure; 65 [x, y] = meshgrid(-3:0.1:3, -3:0.1:3); 66 z = exp(-x.^2 - y.^2); 67 surf(x, y, z) 68 title('Bentuk 8: Gaussian') 69 xlabel('X'); ylabel('Y'); zlabel('Z'); 70 </pre>	
Heliks	<pre> Tugas_4_Ceria.m x 71 % Bentuk 9: Heliks 3D 72 figure; 73 t = linspace(0, 10*pi, 1000); 74 x = cos(t); 75 y = sin(t); 76 z = t; 77 plot3(x, y, z) 78 title('Bentuk 9: Heliks') 79 xlabel('X'); ylabel('Y'); zlabel('Z'); 80 grid on 81 </pre>	
Cosinus Bergelombang	<pre> Tugas_4_Ceria.m x 81 82 % Bentuk 10: Permukaan Cosinus Bergelombang 83 figure; 84 [x, y] = meshgrid(-4:0.1:4, -4:0.1:4); 85 z = cos(x) + cos(y); 86 surf(x, y, z) 87 title('Bentuk 10: Cosinus Bergelombang') 88 xlabel('X'); ylabel('Y'); zlabel('Z'); 89 </pre>	

<p>Piramida</p>	<pre> Tugas_4_Ceria.m x 89 90 % Bentuk 11: Piramida 91 figure; 92 [x, y] = meshgrid(-1:0.05:1, -1:0.05:1); 93 z = 1 - max(abs(x), abs(y)); 94 z(z &lt; 0) = NaN; % Hindari area negatif 95 surf(x, y, z) 96 title('Bentuk 11: Piramida') 97 xlabel('X'); ylabel('Y'); zlabel('Z'); 98 </pre>	
<p>Spiral Shell</p>	<pre> Tugas_4_Ceria.m x 99 % Bentuk 12: Spiral Shell (Kerang Laut Parametrik) 100 figure; 101 theta = linspace(0, 4*pi, 200); 102 phi = linspace(0, 2*pi, 50); 103 [theta, phi] = meshgrid(theta, phi); 104 a = 0.2; 105 b = 0.6; 106 c = 0.1; 107 x = (a + b.*theta.*cos(phi)) .* cos(theta); 108 y = (a + b.*theta.*cos(phi)) .* sin(theta); 109 z = c*theta + b.*theta.*sin(phi); 110 surf(x, y, z) 111 title('Bentuk 12: Spiral Shell') 112 xlabel('X'); ylabel('Y'); zlabel('Z'); 113 </pre>	
<p>Monkey Saddle</p>	<pre> Tugas_4_Ceria.m x 113 114 % Bentuk 13: Permukaan Saddle Tingkat Lanjut (Monkey Saddle) 115 figure; 116 [x, y] = meshgrid(-2:0.05:2, -2:0.05:2); 117 z = x.^3 - 3*x.*y.^2; 118 surf(x, y, z) 119 title('Bentuk 13: Monkey Saddle') 120 xlabel('X'); ylabel('Y'); zlabel('Z'); 121 </pre>	
<p>Love (Hati)</p>	<pre> Tugas_4_Ceria.m x 121 122 % Bentuk 14: Love 123 % volume data 124 step = 0.05; 125 [X,Y,Z] = meshgrid(-3:step:3, -3:step:3, -3:step:3); 126 F = (-(X.^2).*(Z.^3)-(9/80).*(Y.^2).*(Z.^3)).*(X.^2).*(9/4).*(Y.^2).*(Z.^2)-1).^3; 127 % shaded surface 128 isosurface(X,Y,Z,F,0) 129 lighting Phong 130 axis equal 131 view(-39,30) 132 set(gcf, 'Color','w') 133 colormap flag 134 title('Bentuk 14: Hati') 135 </pre>	
<p>Spiral Heliks Bergelombang</p>	<pre> Tugas_4_Ceria.m x 135 136 % Bentuk 15: Spiral Heliks Bergelombang 137 figure; 138 t = linspace(0, 6*pi, 200); 139 z = linspace(0, 5, 200); 140 r = 1 + 0.5 * sin(5*t); % variasi jari-jari 141 x = r .* cos(t); 142 y = r .* sin(t); 143 plot3(x, y, z, 'LineWidth', 2) 144 grid on 145 title('Bentuk 15: Spiral Heliks Bergelombang') 146 xlabel('X'); ylabel('Y'); zlabel('Z'); 147 axis equal </pre>	

## Bintang Laut

```
Tugas_1_Ceniam >
148
149 % Bentuk 16: Bintang Laut
150 clear; clear; close all;
151 % Parameter grid
152 theta = linspace(0, 2*pi, 200); % Sudut polar
153 r = linspace(0, 1, 100); % Jari-jari
154 [theta, r] = meshgrid(theta, r);
155 % Bentuk bintang laut dengan 5 lengan
156 arms = 5;
157 rho = r .* (1 + 0.3 * sin(arms * theta));
158 % Konversi ke koordinat Cartesian
159 x = rho .* cos(theta);
160 y = rho .* sin(theta);
161 % Bentuk permukaan 3D melengkung
162 z = 0.2 * (1 - r.^2) .* cos(arms * theta);
163 % Plot permukaan
164 figure;
165 surf(x, y, z, 'EdgeColor', 'none');
166 colormap(jet);
167 shading interp;
168 % Tampilan dan pencahayaan
169 axis equal;
170 view(3);
171 xlabel('X'); ylabel('Y'); zlabel('Z');
172 camlight; headlight;
173 lighting phong;
174 % Judul dan properti teks
175 title('Bentuk 16: Bintang Laut', 'FontSize', 14, 'FontWeight', 'bold');
```

