```
% problem 1

X_p = .75:1:4.75;
answer = zeros(3,5);
for id = 1:length(X_p)
    X = -5:2:5;
    answer(1,id) = Lagrange(X,  1./(X.^2 + 1),  X_p(id));
    X = -5:1:5;
    answer(2,id) = Lagrange(X,  1./(X.^2 + 1),  X_p(id));
    X = -5:.5:5;
    answer(3,id) = Lagrange(X,  1./(X.^2 + 1),  X_p(id));
end
answer1_1 = answer

X_p = [-.95 -.05 .05 .95];
answer = zeros(3,4);
for id = 1:length(X_p)
    X = -1:.4:1;
    answer(1,id) = Lagrange(X,  exp(X),  X_p(id));
    X = -1:.2:1;
    answer(2,id) = Lagrange(X,  exp(X),  X_p(id));
    X = -1:.1:1;
    answer(3,id) = Lagrange(X,  exp(X),  X_p(id));
end
answer1_2 = answer

% problem 2
X_p = [-.95 -.05 .05 .95];
answer = zeros(3,4);
for id = 1:length(X_p)
    X = -1:.4:1;
    answer(1,id) = Lagrange(X,  1./(X.^2 + 1),  X_p(id));
    X = -1:.2:1;
    answer(2,id) = Lagrange(X,  1./(X.^2 + 1),  X_p(id));
    X = -1:.1:1;
    answer(3,id) = Lagrange(X,  1./(X.^2 + 1),  X_p(id));
end
answer2_1 = answer

X_p = [-4.75 -.25 .25 4.75];
answer = zeros(3,4);
for id = 1:length(X_p)
    X = -5:2:5;
    answer(1,id) = Lagrange(X,  exp(X),  X_p(id));
    X = -5:1:5;
    answer(2,id) = Lagrange(X,  exp(X),  X_p(id));
    X = -5:.5:5;
    answer(3,id) = Lagrange(X,  exp(X),  X_p(id));
end
answer2_2 = answer

% problem 5
```

```
X_p = [5 50 115 185];
answer = zeros(4,4);
for id = 1:length(X_p)
    X = [1 4 9];
    answer(1,id) = Lagrange(X,  sqrt(X),  X_p(id));
    X = [36 49 64];
    answer(2,id) = Lagrange(X,  sqrt(X),  X_p(id));
    X = [100 121 144];
    answer(3,id) = Lagrange(X,  sqrt(X),  X_p(id));
    X = [169 196 225];
    answer(4,id) = Lagrange(X,  sqrt(X),  X_p(id));
end
answer4 = answer
```

```
answer1_1 =

    0.5290    0.3733    0.1537   -0.0260   -0.0157
    0.6790    0.1906    0.2156   -0.2315    1.9236
    0.6368    0.2384    0.0807   -0.4471  -39.9524


answer1_2 =

    0.3868    0.9512    1.0513    2.5858
    0.3867    0.9512    1.0513    2.5857
    0.3867    0.9512    1.0513    2.5857


answer2_1 =

    0.5171    0.9928    0.9928    0.5171
    0.5264    0.9975    0.9975    0.5264
    0.5256    0.9975    0.9975    0.5256


answer2_2 =

    1.1470    1.3022    1.8412  119.6210
   -0.0020    0.7787    1.2841  115.6074
    0.0087    0.7788    1.2840  115.5843


answer4 =

    2.2667  -20.2333 -171.9000 -492.7333
    3.1158    7.0718   10.1670   10.0388
    4.4391    7.2850   10.7228   13.5357
    5.4972    7.8001   10.8005   13.6006
```

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